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THE UNIVERSITY OF ALBERTA

AN INVESTIGATION OF THE UNDERSTANDING OF WRITTEN TIME
EXPRESSIONS IN GRADES FOUR, FIVE AND SIX

by



LYNN MORGAN HESLUP

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
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The undersigned certify that they have read, and recommend
to the Faculty of Graduate Studies and Research, for acceptance,
a thesis entitled "An Investigation of the Understanding of Written
Time Expressions in Grades Four, Five and Six" submitted by Lynn
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ABSTRACT

Owing in part to their nebulous nature, temporal concepts have been found to present comprehension problems to children. Elementary school students not only have difficulties responding to questions involving time, but are often unable to discuss daily events using time terminology.

The purpose of this study was to determine the kinds of time expressions present in reading textbooks as well as to investigate upper elementary school students' understanding of these expressions.

Using a sampling procedure, nine basal readers recommended for use in Alberta schools at the fourth, fifth and sixth grade levels were analyzed. Initially, forty-seven time expressions complete with their illustrative sentences were isolated. From this group, eighteen expressions were selected for comprehensive examination. This in-depth analysis involved coding one thousand five hundred and ten time expressions as to the meanings they assumed within single sentences. The Intermediate Dictionary served as a standard measurement.

It was found that the majority of the time expressions had a large number of definitions and that these definitions often referred to a number of concepts. Though meanings were primarily temporal in origin, others referred to space and causal relations. Some definitions were considered archaic, others are found in print but are not used in conversation. Though the expressions can assume several functions in sentences, they most often represent adverbials. Because multiple meanings and functions characterized many of the textbook

sentences, it was suggested that the child, in order to understand the time expressions he is exposed to in his reading textbooks, would be required to have a thorough understanding of time words.

As an exploratory offshoot of the main study, two tests were designed to investigate grade four and five students' understanding of certain time expressions. A cloze test was found to be an effective way to measure knowledge of time expressions within paragraphs, a multiple choice test format, to investigate understanding within single sentences. Data were subjected to a reliability formula, item analysis, and t-test procedures.

Owing to the limitations imposed by the test sample and the tests themselves, only generalizations were noted. Sixty percent of the students responded correctly to multiple choice test and cloze test items. The difference in the scores between the grade levels did not prove to be statistically significant. Presenting the most difficulty to the entire sample within single sentences, were the words then, now, and before. Within continuous prose, the word then was clearly the most difficult for the students.

On the basis of the findings it was suggested that teachers be made aware of the high frequency of temporal expressions contained within reading textbooks and of the possibility of comprehension difficulties which these expressions may present.

A number of suggestions for further research were outlined.

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Chapter 1

THE PROBLEM: ITS NATURE AND SIGNIFICANCE

INTRODUCTION

Time plays a central role in the lives of present day North American society. Evidence of this is the variety and quantity of expressions alluding to time used commonly in daily conversation. For example, one speaks of "supper time," "Christmas time," "game time," "time out." One can be "behind the times," "doing time," "in time," be cautioned to "take time," and cautioned against "wasting time." Adolescents are reminded that "time is money." The middle-aged remark "every year grows shorter than the year before."

Many studies (Oakden and Sturt, 1922; Harrison, 1934; Walker, 1968) have shown time concepts to be of particular difficulty for children. There is considerable evidence that the process by which they are attained is a very slow and gradual one (Jenkinson, 1962). This complex process involves the abstraction and generalization of elements drawn from the child's perceptions of his environment. Subsequently these generalizations are refined through the processes involved in analysis and synthesis. Children's time concepts develop slowly because of the lack of vicarious experiences from which to abstract and generalize.

Teachers of the elementary grades are familiar with the problem some students have in understanding, for example, causal relationships and sequence of events related to their reading materials.

A survey conducted by Welsey and Wronski (1958) showed that a significant proportion of students in high school and college do not have complete understanding of time expressions commonly used in their textbooks, suggesting that the development of time concepts may not be fully realized until adulthood.

THE PROBLEM

If time concepts are acquired slowly, and do present problems to the young child, these difficulties will be evident in his comprehension of time expressions found in his reading textbooks.

If the frequency of time expressions is high, as a cursory examination would seem to indicate, substantial loss of meaning could effect the author's intended message. Not only is the author's message altered, but the young reader is confronted with unnecessary frustration. His reading failure he may attribute to his own lack of intelligence whereas it stems from language structures which he is as yet insufficiently mature to grasp.

It is the purpose of this study to:

1. determine the extent to which children at the fourth, fifth and sixth grade levels are exposed to time expressions in their readers; and
2. determine the child's understanding of written expressions of time.

DEFINITION OF TERMS

A number of expressions focal to this study are used repeatedly in the writing of this report. These terms as expressed and used in this study are explained.

1. Time. "The general concept, relation, or fact of continuous or successive existence, capable of division into measurable portions, and comprising the past, present, and future" (Walker, 1968, p. 5).
2. Time Expression. The words and phrases in the English language that express concepts relating to time. They can be definite, referring to a specific time such as March 3, 1958 or else indefinite, imprecise, depending upon context for meaning, such as "soon," "in a little while."
3. Adverb. A word that extends or limits the meaning of verbs but is also used to qualify adjectives or other adverbs, especially in place, time, manner, degree. Most adverbs are adjectives or participles plus the ending ly. (The Intermediate Dictionary, 1963, p. 14)
4. Adverbial Expressions of Time. The words and phrases in the English language that express the concepts relating to time and which function as adverbs in the sentence or sentences.
5. Concept. "The abstracted and often cognitively structured classes of experience learned by organisms in the course of their life histories" (Carroll, 1964, p. 180).
6. Frequency (of Time Expression). The total number of time

expressions or expressions containing words that often allude to time found in a set sampling procedure of written material.

7. Density (of Time Expression). Number of time expressions or expressions containing words that often allude to time divided by the number of pages of written material sampled.

8. Cloze Procedure. The technique whereby a passage is mutilated by the deletion of every nth word and administered to subjects who attempt to restore the missing words.

RESEARCH QUESTIONS

With the purpose of this study in mind the following research questions were formulated.

1. Is there a high frequency of time expressions found in reading textbooks at the grade four, five and six levels?
2. What time expressions in reading textbooks are children exposed to in grades four, five and six?
3. Is there a greater number of time expressions found at any particular grade level or within a particular reader series?
4. How do time expressions function in sentences contained within reading texts at the grade four, five and six levels?
5. What range of meanings can these time expressions assume in reading texts?
6. Do these written expressions of time present reading comprehension problems to children in grades four and five
 - (a) in single sentences?

(b) in continuous prose?

7. Which written time expressions prove most difficult for grade four and five children to understand?
8. Which written time expressions are easiest to understand by children in these grade levels?
9. When errors are made in understanding time expressions, what type of errors are common?
10. Do successive grades reveal a significant general increase of children's understanding of written time concepts?

LIMITATIONS

The following limitations of the design of the study are acknowledged.

1. The complete text of every tenth page of selected basal readers was analyzed in order to obtain a representative sampling of temporal expressions. Though this procedure is often used to assess readability levels, the validity and reliability of this procedure as far as the present study is concerned was not established.

2. For manageability and time reasons only selected time expressions were analyzed. The main criteria for inclusion was high frequency. It may well be that the expressions children are least exposed to present the most problems.

3. Only the child's understanding of written time expressions was investigated. No attempt was made to analyze his verbal understanding of time in an oral situation or to recheck orally his answers on the written means of expression.

4. Because of the exploratory nature of one part of this study only a small sample of children was included for testing purposes. The variables of age, sex, general intelligence and second language users were not controlled for. These facts should be considered when attempting to generalize any of the results to other populations.

Also, the tests themselves are very limited in scope. Only the understanding of a few time expressions was tested and this in a limited way.

SIGNIFICANCE OF THE STUDY

The results of this study may have implications for classroom teachers and university educators of prospective teachers. If temporal expressions found in authorized reading textbooks do cause comprehension problems for children, classroom teachers should be made aware of several facts. This study will describe three popular reader series with respect to number and type of time expressions. It would therefore then be possible to choose a reader series of low, moderate or high density of time expressions. Data regarding the most frequent time expressions and the degree of difficulty children have in understanding them in isolated sentences and within continuous prose might also give suggestions. Teachers will also be made aware of the different meanings each time word possesses. If it is found that words having a large number of meanings cause the most problems, or if a particular type of meaning, for example the time meanings, cause the most problems, these words and particular meanings could be

isolated for instructional purposes. Educators of future school teachers could also make this information available to their students.

OVERVIEW OF THE INVESTIGATION

Nine basal readers, authorized by the Department of Education, Province of Alberta, for children in grades four, five and six were analyzed for the presence of single words or expressions which could refer to time. Frequency and density charts of these expressions were constructed according to grade level and reader series. Eighteen of these words were further analyzed according to the meaning they assumed in the sentences in which they were found.

Two tests were constructed and given to students in grades four and five to test their understanding of selected expressions of time. A multiple choice test investigated understanding of time expressions in single sentences, while a cloze test investigated knowledge of time expressions in continuous prose.

Analysis of the data obtained from these tests showed which expressions of time children find most difficult to understand in their reading. Errors made on both tests were also analyzed.

A review of research related to this investigation is presented in Chapter 2. Chapter 3 describes the research design. Chapters 4 and 5 report on the analysis of textbook findings and test results. The concluding chapter summarizes the investigation procedure, the implications of the study and suggests possible related research.

Chapter 2

REVIEW OF RELATED LITERATURE

The purpose of this chapter is to provide a theoretical background for investigating the number and type of expressions of time (primarily adverbial) present in a representative sampling of children's reading textbooks. By collating educational research involved with various aspects of time, it is hoped that the demands placed on the child by his reading texts may be more clearly understood.

The chapter is divided into two parts. First is a review of studies which consider general concept development and language acquisition. The second section consists of a similar review dealing more specifically with time concepts. This section also looks at research on the difficulties associated with understanding adverbial time expressions.

CONCEPT DEVELOPMENT AND LANGUAGE ACQUISITION

The Process of Concept Development

A commonly quoted definition of concept is Dewey's (cited by Serra, 1953, p. 275) "meaning sufficiently individualized to be grasped and readily used, and thus fixed by a word."

Stated another way concepts are "properties of orgasmic experience—more particularly they are the abstracted and often cognitively structured classes of 'mental' experience learned by the

organisms in the course of their life histories" (Carroll, 1964, p. 180).

Piaget (1954) suggested that major concepts are acquired through two central processes, assimilation and accommodation. Assimilation is the internalization of certain aspects of the environment, these aspects becoming organized within classes or groups. Accommodation refers to the adjustments that the child will impress on the new data in order to fit it into his frame of reference. Thus the child receives new input from the environment which is assimilated in terms of previously received and interpreted knowledge.

If conceptualization is in part based on environmental input, then the child's facility for organizing and categorizing information is determined in part by his ability to perceive the environment.

According to Piaget, the child when between the ages of 7 and 11 reaches the "Concrete Operations" stage of intellectual development. This phase is characterized by the child's ability to think in logical terms. He now has the intellectual facility to enable him to combine various operations in order to form new ones; and he becomes increasingly able to deal symbolically with various kinds of materials. The Concrete Operations stage of intellectual development signals the beginnings of concept formation.

Another view of the processes involved in concept development is provided by Sigel (1953) who considers the primary processes, all facilitated by language, to be: discrimination, perception, transposition, and generalization. He sees perceptual learning as the process by which children get information from the environment given

that children respond to different kinds of stimuli at different ages. Transposition refers to the child's ability to respond to new stimuli with responses learned under a different set of conditions.

It was determined by Serra (1953) that the more direct the experience on which a concept is built, the greater will be the individual's knowledge of that concept. However, because one cannot rely on direct experience to furnish the depths of all concepts, vicarious experience received through the medium of language must be utilized.

According to Carroll (1964) concept formation depends on a series of experiences that are in one or more respects similar. Experiences embodying the concept must then be preceded or followed by or interspersed with other experiences constituting negative instances of the concept. The acceptance or rejection of a specimen is the outward sign of the attainment of a concept.

Language and Concept Formation

"The word has a basic function not only because it indicates a corresponding object in the external world, but also because it abstracts and isolates the necessary signal, generalizes perceived signals and relates them to certain categories; it is this systematization of direct experience that makes the role of the word in the formation of mental processes so exceptionally important" (Luria, 1959, p. 12).

Usanadze (cited by Vygotsky, 1962) found that while fully formed concepts are relatively late in appearing, children begin to use words early in life and, with their aid, establish mutual

understanding with their peers and adults.

After investigating the area of language acquisition and intellectual development, Koehler and Yerkes (cited by Vygotsky, 1962) concluded that speech originates in emotion. Koehler considered the infant's babbling and crying representative of the pre-intellectual beginnings of speech. Vygotsky (1962) found that, although thought and speech may develop independently in the first year of life, they may become interdependent by age 2. Two observable signs that speech is being served by intellect are the child's sudden active curiosity about words and his increasing vocabulary. It would seem that at a particular point in the child's development his speech, which in the earlier stages was affective, now enters the intellectual phase. Words come to correspond to concepts through a reinforcing condition that brands a word as being associated with a given concept. The word must evoke the concept and the concept must evoke the word.

Concepts then, it would appear, develop slowly throughout childhood gaining their breadth and depth from the interplay of similar and diverse experiences and from increasing ability to use spoken language.

Reading and Concept Development

Several studies, including Goins (cited by Smith and Dechant, 1961), Braun (1963), and Rabinovitch et al (cited by Vernon, 1971), have suggested that reading achievement may be related to the ability to form concepts. The process of reading is complex. The young reader is required to come to terms with the audio-visual peculiarities of printed language, the early stages of which are likely to be difficult.

It is essential that the child be able to relate to and understand the ideas and concepts which are represented by the printed symbols. It is necessary to insure that the concepts which appear in the child's reading materials are not beyond his level of conceptual development.

THE DEVELOPMENT OF TEMPORAL CONCEPTS

The Child's Understanding of Time

Many researchers have studied the knowledge of time that children have at various age levels. Those which trace the development of time concepts in the elementary school aged child are included here.

One of the earliest studies designed to investigate the child's knowledge and appreciation of time was conducted by Oakden and Sturt (1922) who suggested a developmental trend in the formation of time concepts. They found that children respond to and use temporal expressions which are of personal interest to them before they can understand similar expressions which are more remote from their daily lives. Expressions denoting frequent cycles (such as days of the week) were grasped more quickly than those denoting infrequent cycles (such as months of the year). Questions involving duration were clearly the hardest for children to answer. Oakden and Sturt believe that the educated adult's knowledge of "conventional" time results from a gradual process of learning dependent in part on conditioning and exposure during infancy and childhood. Learning proceeds partly by contact with adults who understand the use of different time

expressions, and partly through definite teaching in subject areas such as history.

One hundred and sixty children ranging from kindergarten to grade three were tested by Harrison (1934) regarding their knowledge of fifty common temporal terms which had been selected from eight vocabulary studies. Her data indicate a continuous and steady increase from grade to grade in growth of temporal concept formation. She concluded that the development of time concepts parallels inner maturation as indicated by chronological age and grade placement.

Ames (1946) was involved in compiling verbal expressions of time used by young children. She obtained her data from two groups of children, one group ranging in age from 18 to 48 months and the other group aged 5 to 8 years. On the basis of her observations and interviews, Ames postulated three levels of temporal attainment. Initially the child is able to respond suitably to a time word; then he becomes able to use it himself in spontaneous conversation; and finally he will be able to correctly answer questions dealing with the time concept. The child will comprehend and use expressions denoting the specific before he can those denoting the more general. From an analysis of taped recordings Ames found that children are able to use words referring to the present before they can use words denoting future or past. Words dealing with the future appear more frequently in the child's conversation than words directed to the past.

In individual interviews with 89 children aged from 4 to 6 years, Springer (1952) investigated the child's ability to tell time

by a clock, set a clock, answer questions about clock hands as well as tell the time of certain activities in his daily schedule. She concluded that, as a result of incidental experiences and formal instruction in the home, the ability to perform the tasks presented increases consistently with maturity.

An interesting study by Farrell (1952) attempted to investigate the understanding of time relations held by 5, 6 and 7 year old children and undertook an analysis of the thought processes involved in the construction of responses to questions involving time. Results of a questionnaire indicated a growth of time development between the ages of 5 and 6 but not between 6 and 7. The 7 year olds used a slightly more sequential approach to time, a preconceived idea as to what the answers should be, and a tendency to generalize on the total test.

A study designed to investigate the factors which influence the elementary school child's understanding of time duration was undertaken by Newman (1967). He reported that intelligence, chronological age, grade placement, and socio-economic status are all significant predictors of the child's ability to understand duration. In general, comparisons of duration are understood by children in grade three. Newman reported that the ability to use measures of duration appeared to be closely linked to the ability to understand verbal comparisons of duration. His study suggests that verbal and practical understanding precedes ability to comprehend written expressions of duration.

Successful instruction of the child in any field of knowledge

requires not only an understanding of the logical patterning of steps leading to the attainment of concepts, but also an understanding of which concepts the child is thought to possess at various age levels. Analyses of textbooks establish the concepts which the child is exposed to at various grade levels.

Time Concepts in Textbooks

One of the first studies to investigate the specific area of time concepts in children's literature was undertaken by Kelty (1925). She applied a three term classification system (definite, indefinite, and comparative time expressions) to one hundred books representative of the literary materials read widely in the primary grades. She constructed tables which explained the frequency and distribution of time expressions found at the various grade levels. She then arranged the time words according to their overall frequency of occurrence. For example, she found that the word "second" was used only 32 times and in 11% of the books, whereas "minute" was used 257 times and in 47% of the books. Those words used most frequently and appearing in a large number of books were selected to be used in test items for grades four, five and six. Five tests were developed to measure general reading ability and understanding of chronology, time judgments in a given context, and time judgements requiring reasoning, as well as children's preferences as to definite and indefinite time expressions. Analysis of the test results indicated the following major findings:

1. Children have difficulty selecting time expressions from the written page. In this particular test the problem may have been

due to the degree of difficulty of the passage itself. However, children may be accustomed to skipping over expressions of time just as they are prone to skipping over words which they do not recognize. Time expressions may prove too difficult or ambiguous to warrant time spent in deciphering them.

2. Providing that the medium of expression offered no difficulties, most children in the sample had a very good understanding of relative lengths of time-units. It would appear that children are able to understand and work with time as long as the expressions are not deeply embedded in written materials.

3. There is generally little correlation between the child's knowledge of time and the time concepts found in his school reading materials. The time concepts found in reading materials may be directed to children of a higher level of maturity than those for whom the books are intended.

A representative sampling of basal reading materials used at the pre-primer, primer, first and second grade levels was used by Marcum (1943) to investigate the number and type of concepts thought to be held by elementary school children. She analyzed sixty books and attempted to construct a list of concepts required by the children if they were to be successful in their understanding of the texts. Using rather lenient criteria she isolated 2,748 concepts from which she formed a basic list of 287 frequently appearing concepts. Among these were several references to time. She recommended that reading in the initial stages should not be complicated by the presentation of unfamiliar concepts; she further suggested that the concept load

of reading texts should be considered as important as vocabulary and format.

Wilson (1959) analyzed the quantitative concepts found in the social studies and arithmetic textbooks used in grades four through seven. In a survey of texts for each of these four grades, 73,262 quantitative terms were isolated. More than 10,000 of this total involved dates and time measures and references to time.

Another investigation of quantitative concepts was undertaken by Jarolimek and Foster (1959) using grade five social studies textbooks. The study considered the frequency of occurrence of various kinds of quantitative concepts as well as the child's understanding of them. The quantitative concept was defined as "any reference or term that designates or implies an increase or a decrease—any phrase, term, or word concerned with measuring, estimating, or enumerating" (p. 437). Jarolimek and Foster reported that it was not unusual to find 10 to 20 quantitative concepts on a single page and as many as 30 to 40 on a page were counted. A questionnaire showed that quantitative concepts are understood by less than half of the children of average or higher intelligence at the fifth grade level. More errors were made regarding indefinite references to time than in any other category.

In order to assess the temporal concepts, generalizations, and skills that the writers of textbooks consider important to the upper elementary school age child, Dobbs (1963) analyzed the time concepts introduced by grade six science, arithmetic and social studies texts. She found great variety in the levels of time concepts

introduced by the different books.

These researchers have shown that school textbooks often contain concepts which are too complex for the readers for which they are intended. Formal instruction may be required to bridge this gap. The next section reviews studies which investigate this possibility.

Teaching an Understanding of Time

Studies concerned with the effects of definite teaching on the development of time concepts resulted in opposing points of view. Pistor (1940) did not find that teaching helped to develop a better understanding of time. Later studies by Arnsdorf (1961) and Becker and Gontner (1966) support the hypothesis that direct and definite teaching of time concepts can increase a child's knowledge and understanding of time.

Pistor experimented with two groups of grade six level children who were equated on the basis of general intelligence, reading ability, and school achievement. In grades four and five the first group was instructed in geography and history while the second group was instructed in geography but learned history only incidentally. At the beginning of grade six both groups were administered a battery of time concept tests which indicated that previous training had no effect on the development of time concepts. Following another year of study under the same conditions, another battery of tests showed that both groups continued to develop their ability to conceive of time. Pistor concluded that the factor of maturation was more important than directed learning.

The study by Arnsdorf was designed to investigate the teaching of chronology in grade six. Two comparable groups of children studied Ancient Civilization for seven weeks. No effort was made to assist either the teachers or the pupils of the control group but the teachers and pupils in the experimental group had specific teaching aids at their disposal. Test results showed that the experimental group made relative gains in the areas of comprehension of definite and indefinite terms, ability to recognize relative lengths of time between periods, skill in ordering events with dates, and competence in recognizing time absurdities.

The final study by Becker and Gontner investigated the understanding of temporal concepts held by 60 grade one students. Time expressions selected from word lists and representative reader series were arranged according to their frequency of use by the children. Twenty time words chosen at random from the list were used in the pre-test, post-test for the control and the experimental groups. Following pre-testing, the 10 words receiving the least number of correct definitions were chosen to be taught directly to the experimental group. The other 10 words were treated incidentally. The control group received no formal instruction. The post-test showed that the younger children of the experimental group made slightly higher gains than the older children. In the control group the older children made slight gains indicating, in the absence of direct instruction, maturation accounts for some part of time concept development. Direct instruction appeared to be of considerable importance regarding the increase of time understanding within the experimental

group.

If we are to understand the specific problems faced by children in confrontation with the many time expressions found in their texts, and if we are to instruct children in aid of time concept development, we must learn to recognize the structural and semantic differences in the many existing temporal expressions. One of the most difficult for the child to understand is the adverb, which is central to the present study. Thus, it is necessary to devote some space to a review of adverbials.

Adverbial Expressions of Time

The adverb can be defined as a part of speech that modifies a verb, an adjective or another adverb. Being able to fill a number of positions in a sentence, it is also capable of modifying a phrase, clause or an entire sentence.

Adverbs are generally classified as:

1. Adverbs of Time (now, soon, never)

Soon there will be nothing.

The eggs are then placed in boiling water.

2. Adverbs of Place (above, below, here)

On her head she was wearing a large hat.

We ate breakfast outside.

3. Adverbs of Manner (cheerfully)

He walked slowly to the door.

He walked with some reluctance to the front of the classroom.

4. Adverbs of Degree, Amount, Number (enough, little)

She is very kind.

We are nearly there.

He works little.

5. Adverbs of Cause (because, consequently, hence, therefore)

Why did you do it?

He failed because he did not study.

6. Adverbs of Inference and Result (but, so)

No man will take counsel, but every man will take money.

There was no one there, so I went away.

Because of this heterogeneity of place and function, Gleason (1965) suggests that written adverbs may cause comprehension difficulties for students. This problem is not only peculiar to young readers, nor is it confined only to reading written material. Frogner (cited by Smith, 1963) analyzing sentence problems in three compositions each written under uniform conditions by 960 students in grades seven, nine and eleven found adverbial clauses written as fragments more frequently than any other kind.

Lefevre (1964) in writing about reading disabilities suggests that problems occur because the reader perceives individual words as if words were meaning, or he groups words visually in structureless patterns that do not and cannot bear meaning. Unlike nouns, adjectives and verbs, most adverbs do not carry a meaning element which can stand alone, which carries a meaning without relating to the rest of the sentence. Adverbs often cannot be considered out of context without resulting in a substantial loss of meaning. It may be the necessity

of relating the adverb to other parts of the sentence or to preceding and succeeding sentences that cause problems to the beginning reader.

SUMMARY

This chapter has attempted to justify the undertaking of the present investigation. The organization of the chapter progressed from concept development in general, to the development of time concepts, to a particular expression of this concept in print.

Concept development has been shown to be a slow process, depending in part upon inner maturation, language facility, and exposure to a number of diverse experiences. The understanding of temporal concepts, because of their abstract nature is particularly slow in developing.

Previous analyses of textbooks for children have exposed a large number of quantitative concepts. In test situations, references to time have caused particular problems. A gap may be seen to exist between what the young child knows concerning time and what he is exposed to in textbooks.

In view of this, a study such as the present, investigating some specifics of this problem, seems to be worthwhile.

Chapter 3

RESEARCH DESIGN

The primary purpose of this investigation is to discover what expressions of time children most frequently meet in their reading textbooks and in what quantities. Having isolated and analyzed these expressions, the question that begs to be asked is, Do children understand these expressions of time as they meet them in their everyday reading? Therefore an exploratory offshoot from the main study was designed which set as its purpose: which time expressions of those that children are most often exposed to, do they have difficulty comprehending?

To investigate the primary purpose of the study a number of children's textbooks were selected and analyzed. As part of the exploratory study, two tests were constructed, a multiple choice format test and a cloze format test. These tests served to give an indication of the child's understanding of selected time expressions.

In this chapter, after a brief description of the three basal reader series selected for analysis purposes, an overview of sentence analysis procedure will be discussed. Tables showing frequency and density of the time expressions are included. The rationale for test design is presented. A discussion of the pilot studies and final test setting conclude the chapter.

ANALYSIS OF TEXTBOOKS

Rationale for Choice of Grade Level

In grades one, two and three the major emphasis of reading instruction is on word recognition skills. Though these are not taught to the exclusion of comprehension skills, the young reader is often more occupied with deciphering the printed symbol than he is with considering the subtleties of the reading material.

Children in the upper elementary grades, having mastered many word recognition skills, now focus on comprehension skills. It was for this reason that children in grades four, five and six were chosen for this investigation. The present study focuses on the child's understanding of time expressions not just on his ability to identify time words. Since an analysis of test results from the second pilot study indicated that the tests were too easy for grade six students, the actual testing included grade four and five students only.

Rationale for Analysis of Basal Readers

Although children in the fourth, fifth and sixth grade levels are exposed to a variety of written materials, much of the formal teaching of reading skills is done through basal readers. It was considered desirable by the investigator to obtain a representative sampling of sentences which have a possibility of being exposed to the largest number of children. Students at these grade levels would have a greater chance to become acquainted with basal series as selected from the recommended provincial textbook list than they would

with a random sampling of fiction and non-fiction books written for children and selected by the investigator. Also, if restrictive measures regulating density and frequency of temporal expressions were exercised, they would most likely be in evidence in instructional textbooks. For these reasons it was decided that the analysis of time expressions should be of sentences contained within basal reader series as opposed to sentences contained within children's literature in general.

Selection of Reader Series

A number of reader series are recommended for use in Alberta schools by the Department of Education, Government of Alberta. For the analysis, three basal reader series were chosen from this group, the Nelson Language Development Series (Young Canada Readers), the Ginn Basic Readers, and the Gage Language Experience Readers.

The Young Canada Readers is a basal series which has a strong literature base. Many of the selections are written by well known Canadian and American authors and poets. Though emphasis is on the development of basic reading skills, it is thought that these skills are more readily accepted when introduced through quality literature. "In order to achieve this combined purpose, the words of the author remain unchanged in all but one of the selections; pupils, in the natural reading situation, meet literature in its original form without its freshness being destroyed by adaptation" (p. 7).

The Ginn Basic Readers are an older reader series widely used in Alberta schools. The selections are arranged within a number of

headings which represent commonality of subject, e.g. science, animal stories, farm stories. A poetry selection is included at the back of the reader.

The final readers, Gage Language Experience is a very recent series, the sixth grade level being only recently completed. This series at the first, second and third levels has been readily accepted in Alberta schools. It is anticipated that the books for the higher grades will be received equally as well. This series is strongly language arts based. Reading is seen as one of four closely related and independent facets of language.

The following books were the basal readers for grades four, five and six in the three series selected for this investigation:

Series	Date of Latest Printing	Grade	Name of Reader
Young Canada Readers	1965	4	Young Canada Readers 4
		5	Young Canada Readers 5
		6	Young Canada Readers 6
Ginn Basic Readers	1962	4	Adventure Awaits
		5	Beyond the Horizon
		6	New Worlds
Gage Language Experience Readers	1974	4	People Like Me
		5	Remember Me
		6	How Many Miles?

Throughout the remainder of the study the Young Canada Readers will be called Series A, the Ginn Basic Readers, Series B and the Gage Language Experience Readers, Series C.

Method of Sampling Sentences

The sentences for analysis were taken from the total text of

every tenth page of all these books to the nearest complete sentence. Only sentences from stories and plays were considered in the analysis as it was thought that the irregular patterns of English contained in poetry are not representative of English commonly found in children's textbooks. When a selection of poetry was encountered the first prose selection to appear after the poetry was taken for the sample of sentences.

ANALYSIS OF TIME EXPRESSIONS

Method of Selection of Sample

In order to decide which expressions of time would be selected for detailed analysis and description it was necessary to isolate all words which were thought to embody an element or elements of time. A total of 47 entries representing single words and groups of words (days of the week, months of the year) were isolated. The total frequency of all these expressions is 2,227. As each expression of time was isolated a record was made as to reader series, grade level, page number and the number of the line on which the expression occurred. This information was written in abbreviated form in the upper left hand corner of a 4 x 6 inch card. The word and the sentence in which it was used were also recorded. To aid in the immediate recognition of sentences from reader series a color system was found to be effective. Figure 1 illustrates the recording of the data.

YC5 P50 L26

Then

Then he broke an egg into the
frying-pan.

FIGURE 1

DATA RECORDING CARD

Initial Analysis of Total Time Expressions

Grade. Table 3.1 lists the 47 time expressions and their frequencies and totals as regards to grade level. On closer inspection of Table 3.1, two facts become apparent. It can be seen that:

1. There are a large number of expressions of time found at all grade levels.
2. The totals for the grade levels show a gradual increase in the number of time expressions from grade to grade. This table shows 672 time expressions in grade four, 733 in grade five and 822 in grade six. The total number of times an individual time expression may appear in the readers varies from grade level to grade level.

Series. Table 3.2 lists the 47 words and their frequencies and totals as regards to reader series. It can be seen from this table that:

1. There is little difference in the total frequency of time expressions between Series A and B, but a considerably greater difference between these two and Series C. Series A contains 684 expressions of time, Series B, 606 and Series C, 937.
2. The frequency of the individual time expression can vary greatly from reader series to reader series. For example the word always appears 24 times in Series C, 12 times in Series A and only 6 times in Series B.

Method of Choosing Selected Time Expressions

Because this group of 47 words seemed too large and too diverse to manipulate, eighteen words were selected from this list

TABLE 3.1

DISTRIBUTION OF TIME EXPRESSIONS FOR EACH GRADE LEVEL

Expression	Grade Levels				Expression	Grade Levels			
	4	5	6	Total		4	5	6	Total
after	29	39	36	104	often	5	8	12	25
afternoon	6	6	3	15	on and on	--	--	2	2
always	19	8	15	42	once	20	17	24	61
autumn	1	1	2	4	presently	2	3	4	9
before	21	43	36	100	second	3	8	14	25
breakfast	5	--	2	7	since	6	7	11	24
centuries	--	3	2	5	soon	11	13	14	38
dates	12	8	23	43	spring	4	4	8	16
day	44	44	63	151	sudden(ly)	18	9	16	43
days of the week	4	3	4	11	summer	8	4	7	19
dinner	2	4	1	7	supper	1	2	--	3
evening	3	3	4	10	times (9:00)	3	3	1	7
ever	23	22	15	60	then	66	87	85	238
fall	1	--	--	1	today	--	1	5	6
hour	7	2	8	17	tomorrow	3	1	--	4
just	38	33	40	111	until (till)	24	12	24	60
last	22	18	20	60	weeks	10	6	6	22
minute	10	7	11	28	when	70	92	75	237
moments	10	12	23	45	while	20	22	21	63
months	1	4	7	12	winter	8	18	6	32
morning	19	13	12	44	years	26	30	42	98
names of months	4	4	11	19	yesterday	--	3	5	8
never	14	24	21	59					
night	18	26	12	56					
now	51	56	69	176					
						672	733	822	2227

TABLE 3.2

DISTRIBUTION OF TIME EXPRESSIONS FOR EACH READER SERIES

Expression	Series				Expression	Series			
	A	B	C	Total		A	B	C	Total
after	31	29	44	104	often	7	10	8	25
afternoon	5	5	5	15	on and on	2	--	--	2
always	12	6	24	42	once	24	14	23	61
autumn	--	1	3	4	presently	5	--	4	9
before	35	29	36	100	second	14	6	5	25
breakfast	--	3	4	7	since	4	6	14	24
centuries	4	--	1	5	soon	13	10	15	38
dates	--	1	42	43	spring	3	4	9	16
day	50	51	50	151	sudden(ly)	9	16	18	43
days of the week	--	2	9	11	summer	2	6	11	19
dinner	2	1	4	7	supper	3	--	--	3
evening	3	3	4	10	times (9:00)	--	1	6	7
ever	20	14	26	60	then	84	69	85	238
fall	--	1	--	1	today	--	1	5	6
hour	8	4	5	17	tomorrow	2	--	2	4
just	27	37	47	111	until (till)	21	17	22	60
last	19	16	25	60	weeks	--	8	14	22
minute	8	10	10	28	when	71	63	103	237
moments	17	15	13	45	while	15	22	26	63
months	3	4	5	12	winter	8	7	17	32
morning	19	8	17	44	years	27	18	53	98
names of months	--	7	12	19	yesterday	3	2	3	8
never	22	14	23	59					
night	23	11	22	56		684	606	937	2227
now	59	54	63	176					

for further analysis. The frequency of the eighteen expressions chosen amounted to 1,510 out of 2,227, the total frequency of the 47 expressions. The bases for inclusion in the in-depth analysis was largely decided upon by the number of times the word appeared in the reader series; those with higher frequency receiving higher priority than those appearing less frequently. As well, the position or function the word or expression occupied in the sentence was considered; that is, did it serve as a noun, adverb, adjective, preposition etc. The primary functions of the selected time expressions appear in Table 3.3. The final group of eighteen words are characterized as being principally either adverbs or adverbial expressions of time. It will be evident in later parts of this study that many of these words at times function other than as adverbials or adverbs, and they do not always embody an element of time.

Coding of Selected Time Expressions

In addition to the isolation of adverbs and adverbial time expressions for purposes of density and frequency counts it was decided to explore the precision of meaning of the selected word or phrase which was conveyed in the sentence and within total context. Only those eighteen expressions isolated for in-depth analysis were further investigated in this way. The assigning of a definition to the time word isolated in each sentence was referred to as coding by the investigator.

As a standard instrument for judging multiple meanings Gage's The Intermediate Dictionary was used. For many years this was the main dictionary used in Canadian Elementary Schools. It also

TABLE 3.3

THE PRIMARY FUNCTIONS OF THE SELECTED TIME EXPRESSIONS

Expression	Adjective	Adverb	Conjunction	Noun	Preposition	Verb
after	1	2	1		9	
always		2				
before		3	2		4	
ever		3				
just	8	6				
last	6	2		3		3
never		2				
now		8	1	1		
often		1				
once	1	3	1	1		
presently		3				
since		3	3		2	
suddenly	2	1				
soon		4				
then	1	6		1		
until			3		2	
when		1	4			
while			2	2		
Totals	19	50	17	8	17	3

provides a satisfactory measurement for this investigation because it is designed to "recognize fully the distinctiveness and variety of Canadian English" (Gage, The Intermediate Dictionary, 1963, p. v). It contains along with each entry, phrases and sentences which have been included to illustrate the precise meaning and function of words and frequently to contrast different meanings of the same word.

The coding of each time expression followed a set procedure. Definitions and accompanying illustrative sentences were copied verbatim from The Intermediate Dictionary and abbreviated according to word and meanings. For example the word before was shortened to "b". The meanings which accompanied this word were recorded as b1, b2, b3, etc. Following are the definitions of the word before as taken from The Intermediate Dictionary. The definitions of the other seventeen words have been included in Appendix A.

Before (b)

b1	in front of; in advance of; ahead of	Walk before me.
b2	earlier than	Come before five o'clock.
b3	rather than, sooner than	I will die before giving in.
b4	in the presence of or sight of	To stand before the king.
b5	in front, in advance, ahead	He went before to see if the road was safe.
b6	earlier	Come at five o'clock, not before.
b7	until now, in the past	I didn't know that before.
b8	previously to the time when	Before she goes, I would like to talk to her.
b9	rather than: sooner than:	I will die before I give in.

In order to explain which multiple meaning best explained the time expression in each particular sentence it was necessary to refer back to the page in the reader on which the expression occurred. By

reading the preceding and succeeding sentences a feeling for context was gained and an association was made between dictionary definition and the meaning conveyed in the sentence. As each sentence was analyzed according to meaning, the code reflective of the word and sentence meaning was recorded at the end of the sentence on the 4 x 6 card. Figure 2 illustrates the coding of the word before as it appears in one sentence taken from the fifth grade book of Series C.

LE5 P25 ¹¹¹ L36
before
She was hoping to finish new sealskin boots for Suluk and Kamik before they went on their next hunt.
b8

FIGURE 2

CODING OF A SENTENCE

In order to establish some reliability of the coding a random selection of twenty percent of the entire body of sentences was given

to two independent people who acted as judges for analysis purposes. The inter-judge reliability was calculated according to the Arrington formula (1932, cited by Feifel and Lorge, 1950, p. 5). The formula is:

$$\frac{2 \times \text{agreements}}{2 \times \text{agreements plus disagreements}}$$

The percentages of agreement between the three judges were as follows:

<u>Independent Judge</u>	<u>Percentage of Agreement</u>
1 + 2	97.096
1 + 3	93.95
2 + 3	91.046

Judge 1 was the investigator.

EXPLORATORY STUDY OF THE UNDERSTANDING OF WRITTEN TIME EXPRESSIONS

Test Construction

Multiple choice.

1. Rationale. A multiple choice test format was chosen to reflect the child's understanding of time in isolated sentences. This type of test has been frequently used in many standardized reading tests with good results. The test as constructed by the investigator was structured in such a way as to provide an opportunity to investigate the nature of the student's errors as well as his ability to select the correct answer. Following is a description of the multiple choice test construction. This procedure produced items for both the pilot studies and the actual test setting.

2. Procedure. Many of the test items were taken directly

from the basal readers analyzed in the first part of this investigation. The remaining items were patterned upon sentences contained within the readers.

The construction of any one test item followed a set procedure. The sentence chosen was written down up to and including the time word being tested. The remaining part of the chosen sentence appeared as one answer below the sentence. In some cases, an equal number of typewriter underlining spaces followed the tested time word, this middle part of the sentence appeared as an answer below the sentence, and the remaining part of the chosen sentence was written after the underlining spaces. The example following illustrates this type of test item.

He sat waiting in the hall while _____ about his bad behavior.
a) his parents spoke to the principal

Each item contained four distractors suitably contrived so as to provide information on the type of errors the children were making. Answer (a) was the correct answer. It would reveal that the student had a good understanding of the tested time expression. Answer (b) was the result of using another time expression than the one tested, for example the remaining sentence may be suitable if the tested word was "after" not "before." This choice tests the student's general knowledge of the time expression. Answer (c) also endeavoured to test the student's understanding of the time expression, but in a more specific way. This response was based on another time meaning of the word being tested than that intended by the stimulus sentence. In choosing this answer the student showed that he has some

understanding of the word being tested but that his knowledge of the various meanings of the word was not specific. Answer (d) was a result of using a non-time meaning of the word tested. In choosing this response the child showed that he was aware of one meaning of the tested expression, but was unaware that an element of time was needed to satisfactorily complete the stimulus sentence. An actual test item illustrates the function of the distractors.

Before _____ close all the windows.

- | | |
|--|--|
| (a) leaving the building remember to | (b8—previously to the time when) |
| (b) the fire bell rings remember to | (another time expression—after) |
| (c) the oldest boy in the class was asked to | (b7 another time expression of before—in the past) |
| (d) disobey the fire rules remember to | (b9—a non-time meaning of before—rather than) |

A random table of numbers dictated the order the choices appeared in for each question on the test. Ten words from the list of eighteen were selected for test purposes. These ten words appeared high in frequency in the basal readers and conformed to the criteria used to contrive the distractors. The following words were tested: when, since, now, last, until, before, while, then, soon and after.

3. Vocabulary control. Every one hundred words of the multiple choice exam were analyzed as to vocabulary using the Botel Readability Measurement. The average grade level of the 30 questions and alternatives was at the 4.5 grade level.

4. Scoring. In scoring the test one mark was given for each correct answer. A record was also kept of the incorrect responses for each item for each test paper.

Paragraph, short answer test. It was originally decided that a paragraph short answer type test would serve to investigate children's understandings of embedded time expressions. To this end such a test was constructed, consisting of seven paragraphs, taken directly from the reading textbooks analyzed, and a total of thirty-four questions. The format of the test questions was either short answer or multiple choice. This test was used in pilot study number one, but was discarded. The reasons are explained fully under the heading Pilot Study Number One. A copy of this test can be found in Appendix B.

Cloze test.

1. Rationale. The cloze test format was chosen to reflect the child's understanding of embedded and interrelated expressions of time. Several investigators have examined the validity of the cloze procedure by correlating the results of cloze tests with other measures of comprehension. Louthan (1965) investigated the effects of modified versions of the cloze technique on the reading comprehension of children. In doing so he deleted specific kinds of words from a number of paragraphs. This modified cloze procedure was used in the present study.

2. Procedure. Five passages approximately 145 words in length were taken from the basal readers analyzed by the investigator. These passages constituted the cloze test administered in the second pilot study and actual test setting.

Following the cloze procedure a number of words from each paragraph were deleted and replaced by an underline space of twelve typewriter spaces. In total twenty-five time words were deleted from the five paragraphs. The words before, never, once, then, and now

were deleted each a total of five times throughout the test but not all in the same paragraph. These words were selected because they appear in high frequency in the readers. Also, the paragraphs from the readers dictated in part which time expressions would be tested. The paragraphs were chosen directly from the readers in order to claim content validity for the test. The children were asked to select a word from a given list of ten time words that would make sense in each blank.

3. Vocabulary control. Using the Botel Readability Measurement, readability scores were computed for each of the passages of the cloze test. The reading levels for the passages are listed below.

<u>Passage</u>	<u>Botel Readability Score</u>
1	Level 4
2	Level 4
3	Level 3.2
4	Level 3.2
5	Level 6

4. Scoring. In scoring the test, only words that corresponded to the original deleted ones were accepted as correct. No credit was given for synonyms. If an incorrectly spelled word was recognizable and otherwise correct, it was accepted providing that the misspelling did not become another word that fitted in the context of that deletion.

A student received one mark for each correct answer, his total mark reflected the number of individual correct answers. The

incorrect answers were then analyzed according to their semantic acceptability with the entire passage. Errors which were semantically unacceptable were coded SU, those semantically acceptable, SA. Frequency charts of the most incorrectly used words were constructed for each grade level. These charts appear in Chapter 5 in the discussion of the test results.

Pilot Studies

Pilot study #1. The first pilot study was conducted in November, 1975, among 46 students in grades five and six not subsequently involved in the main study. The pilot study was undertaken to determine:

1. The approximate time required for students to complete the two tests.
2. The suitable grade levels for the tests.
3. The feasibility of using the test formats.
4. The reliability of the multiple choice test.
5. Administration problems occurring during the tests.

The 30 item multiple choice test and the paragraph, short answer test were given to children representing a middle class socio-economic background.

On the basis of the results obtained from the pilot study it was decided that:

1. The paragraph, short answer test be discarded. The reasons for this include the following: It was difficult to determine if an incorrect response followed from the misunderstanding of the stimulus

paragraph or from difficulty comprehending the question itself. Difficulty also arose in attempting to achieve objectivity in the marking as well as with classifying answers.

2. Some of the test items on the multiple choice test be revised or deleted and replaced by similar test items. Using the Kuder Richardson 20 formula, the test reliability coefficient for the 30 item test was .63. Though this score was acceptable nine choices in the test items did not serve as viable distractors. A copy of the test is included in Appendix C.

3. A second pilot study be conducted to ascertain the effectiveness of the new format test and to test the revised and new items on the multiple choice test. It was decided a cloze test format would be constructed to test understanding of embedded time expressions.

Pilot study #2. The second pilot study was carried out in January, 1976 in an Edmonton school. The 63 children in grades five and six were from middle income families. The purpose of the second pilot study was:

1. to assess the cloze format as regards grade level feasibility and time needed to complete;
2. to assess the reliability of the multiple choice test as well as analyze the effectiveness of the new distractors.

The test reliability as computed using the Kuder Richardson 20 formula was .68. Tables 3.4 and 3.5 report the item discrimination and item difficulty index of each question on this test. The 25 best questions as far as item difficulty, item discrimination and viable distractors were chosen to form the final test. The X appearing under

TABLE 3.4

ITEM DISCRIMINATION OF MULTIPLE CHOICE ITEMS USED IN PILOT STUDY #2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Question 1	.11	.33	.44	-.12	.66	.66	.22	.22	0	.44	.22	.11	.55	.34	.66	.66	.34	.12	.44	.44	.22	.11	.55	.11	.34	.55	.34	0	0	.22
Grade 5	.29	.15	.71	.14	.14	.58	.0	.28	.15	.29	.57	.57	.86	.15	.72	.43	.15	0	.58	.29	.57	.29	.14	.14	.29	.43	.43	.29	-.43	.29

TABLE 3.5

ITEM DIFFICULTY INDEX OF MULTIPLE CHOICE ITEMS USED IN PILOT STUDY #2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Question 1	.38	.60	.66	.94	.55	.55	.77	.77	.88	.66	.66	.71	.49	.83	.55	.55	.83	.94	.55	.66	.66	.82	.49	.71	.83	.38	.83	.88	.44	.44
Grade 5	.85	.92	.49	.78	.64	.71	.85	.71	.92	.86	.56	.56	.57	.92	.64	.49	.92	1.0	.71	.86	.56	.86	.78	.78	.86	.63	.78	.86	.35	.86
Grade 6																														

certain test items in Table 3.5 signals their exclusion from the final test. The multiple choice test used in Pilot #2 is included in Appendix D.

The cloze test included in Appendix E proved to be an effective way of investigating embedded time expressions.

Final Test Setting.

1. Sample. The Edmonton Public School Board provided the investigator with 106 students in four classrooms. The school was described by officials of the school system as a school serving a middle socio-economic population. Thirty-five students in grade four and 71 grade five students were tested. According to Stanford Achievement scores measuring Paragraph Meaning and Word Study Skills obtained in June, 1975, these students have achieved a reading grade level of 4.5.

2. Reliability of multiple choice test. The reliability of the final multiple choice test was computed using the Kuder Richardson 20 formula. Item discrimination and item difficulty coefficients were also computed for each item on this test. These results are reported in Chapter 5. A copy of the multiple choice test for the final test setting is included in Appendix F.

SUMMARY

Nine basal readers at the grade four, five and six levels recommended for use in Alberta schools by the Department of Education were analyzed for expressions which were thought to include an

essence of time. From 47 expressions and single words, eighteen words, being primarily adverbial in function were isolated for further analysis.

Three hundred sentences containing 1,510 of these expressions were coded according to grade level, reader series, and definition. The Intermediate Dictionary provided the standard of meaning measurement.

As an exploratory study two tests were constructed to appraise student understanding of selected primarily adverbial expressions of time. The final test was given to 106 students in grades four and five in one school in the Edmonton Public School System.

Chapter 4

ANALYSIS OF TEXTBOOK FINDINGS

The major portion of this investigation centers on the analysis of eighteen expressions of time contained within nine basal readers at the grade four, five and six levels.

Chapter 4 includes frequency and density tables and their interpretations. Also an in-depth analysis of each time expression is included showing where confusions in reading comprehension may arise for the upper elementary school student.

NUMERICAL ANALYSIS

By Grade

Table 4.1 shows the eighteen isolated expressions of time and their frequencies for each grade level. Also reported is the average density per page of the total selected time expressions at each grade level.

From this table, several facts become apparent:

1. As grade level increases so does the total number of time expressions. In grade four 459 selected time expressions were isolated, in grade five 513 and in grade six 538.
2. Likewise, the average density of time expressions for each page increases with an increase in grade level. In grade four the average density per page is 4.45, in grade five 5.18 and in grade six, 5.48.

TABLE 4.1
DISTRIBUTION OF SELECTED TIME EXPRESSIONS
FOR EACH GRADE LEVEL

Expression	Frequency of Occurrence	Grade Level		
		4	5	6
after	104	29	39	36
always	42	19	8	15
before	100	21	43	36
ever	60	23	22	15
just	111	38	33	40
last	60	22	18	20
never	59	14	24	21
now	176	51	56	69
often	25	5	8	12
once	61	20	17	24
presently	9	2	3	4
since	24	6	7	11
soon	38	11	13	14
suddenly	43	18	9	16
then	238	66	87	85
until	60	24	12	24
when	237	70	92	75
while	63	20	22	21
Total	1,510	459	513	538
Total no. of pages analyzed	300	103	99	98
Average density of time expression per page	5.03	4.45	5.18	5.48

3. The three words appearing highest in frequency at all grade levels are the words when, then and now. Conversely, those words appearing in lowest frequency at all grade levels are the words presently, since and often.
4. Considering each time expression individually a gradual increase in grade level would seem to be instructionally sound. This gradual increase only appears in five of the eighteen expressions. These expressions are now, often, presently, since and soon.

Whereas a few of the remaining thirteen expressions deviate only slightly from such a trend some expressions show random or haphazard frequency increases and decreases. For example, the word always appears 19 times in grade four, only 8 times in grade five and 15 times in grade six. Similarly, the word suddenly is used 18 times in grade four and only 9 times in grade five. At the grade six level this word appears 16 times.

By Series

The investigator believes that adverbial expressions of time may cause comprehension difficulties for children. If this is so, it would be wise to select for instructional purposes, a reading textbook of low or moderate density of time expressions. Table 4.2 furnishes this information. It is shown that:

1. More selected expressions of time are found within Series C, than in either Series A or B.
2. The highest density of time expressions per page is

TABLE 4.2
DISTRIBUTION OF SELECTED TIME EXPRESSIONS
FOR EACH READER SERIES

Expression	Frequency of Occurrence	Reader Series		
		A	B	C
after	104	31	29	44
always	42	12	6	24
before	100	35	29	36
ever	60	20	14	26
just	111	27	37	47
last	60	19	16	25
never	59	22	14	23
now	176	59	54	63
often	25	7	10	8
once	61	24	14	23
presently	9	5	--	4
since	24	4	6	14
soon	38	13	10	15
suddenly	43	9	16	18
then	238	84	69	85
until	60	21	17	22
when	237	71	63	103
while	63	15	22	26
Total	1,510	478	426	606
Total no. of pages analyzed		94	109	97
Average density of time expressions per page		5.08	3.90	6.24

found within Series C at 6.24. The lowest average density per page is found in Series B at 3.90.

3. The three words used most often in all of the reader series are the words, then, when and now. Those appearing least frequently are since, presently and often in Series A and C, and since, always, presently and soon in Series B.

Tables reporting the distribution of the selected time expressions at each grade level for each of the reader series are included in Appendix G.

Number and Distribution of Meanings

For each selected time expression the number of definitions and the frequency of each definition according to the analyzed sentences is reported. This information is shown in Table 4.3. For example, from this table it can be seen that the word after has twelve definitions, but that only nine of these are represented by sentences from the textbooks. This means that three of the meanings (al., all., al2.) were not represented by any of the sampled sentences.

The column at the far right of the table is headed n/a. This abbreviation stands for non-applicable, and was used whenever a sampled sentence was not represented by any of the definitions. This occurred a total of 21 times. The definitions of each expression as copied verbatim from The Intermediate Dictionary appear in Appendix A.

TABLE 4.3
DISTRIBUTION OF MEANINGS OF SELECTED TIME EXPRESSIONS

Word	Number of Definitions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	n/a
after	12		2	31	8	12	23	5	3	12	1						7
always	2	21	21														5
before	9	15	13	1	4		2	7	52	1							
ever	3	50	9	1													
just	14		1		5					13	22	9	5	36	11		9
last	13	10		6		4			2	2		31	1	4			1
never	2	57	1														
now	14	67	15	10	9	8	14		11	5	32			1	4		
often	1	25															
once	15	9	1	20		3			16A	4						2	6
presently	3	9															
since	8	2	3	4		6	1		8								
soon	4	32		6													
suddenly	4	36		4	3												
then	9	75	4		48	84		4	18	3							2
until	4	10	30	3	17												
when	7	6	75	33	120	2	1										
while	5	11		39	2	11											

ANALYSIS OF INDIVIDUAL TIME EXPRESSIONS

As has been reported earlier, eighteen primarily adverbial time expressions were isolated for in depth analysis. This analysis has included investigating the number of meanings of each word and reporting the frequency of each particular meaning as far as the sentences sampled from the readers are concerned.

The next section of Chapter 4 discusses this information, showing where in some cases comprehension difficulties of these time expressions may arise.

Each of the eighteen expressions are discussed in turn. The same type of information is presented for each expression. This information includes the number of times the word appeared in the textbooks, and the number of definitions held by the word. At times the frequency with which the word appeared within the reader series is given. Those definitions occurring most frequently are isolated and sentences taken from the textbooks illustrating the precise meanings are included. Definitions which are represented infrequently or not at all in the textbooks are noted.

Though the peculiarities of each word are understandably different, the investigator attempts to report what the child must know about the word to thoroughly understand the subtle differences in meaning that often exist. Some of the meanings are time based, others refer to space, this distinction itself might cause some problems. Where necessary, reasons for including the expression in the specially constructed tests are given.

After

Of the 104 times this word was isolated, 31 appeared in Series A, 29 in Series B and 44 in Series C. There are twelve definitions of after listed in The Intermediate Dictionary. Of these, five definitions appear in sufficient quantity in the readers to comment upon. Three of these meanings are based in time, one in space and one has to do with causal relations. The time based meanings (a3., a5. and a6.) are illustrated by the following sentences:

- a3. "Do you think the storm will keep our school car from coming day after tomorrow, Chris?" (GB4 P110 L13)
- a5. "This story begins after a huge wave had destroyed a fishing-village on a sandy strip at the base of a mountain. (YC5 P10 Lintro)
- a6. "After breakfast he had said it over and over to himself until he had learnt it off by heart, and now he was humming it right through, properly." (YC4 P149 L8)

Though all three definitions are time oriented, each meaning is slightly different from the other two. That is, definition a3., "next to; following" has a different meaning than a5., "later than the time that," or a6., "later in time than." Definition a3. refers to something happening or occurring immediately or soon after an event, whereas a5. means occurring sometime after a certain event, it may be soon after it may be of longer duration, but in any event, some time later than a particular occurrence. Definition a6. refers to occurring some time after some common, reoccurring event.

The definition of after referring to space is a4. "in pursuit

of; in search of." This meaning is illustrated by the following sentence:

- a4. "Ted and Wornell turned to see Rowdy disappear into the fog with Ann after him." (GB5 P50 L10)

Though a common meaning as far as spoken conversation is concerned, after used in this way occurs in less than 8% of the sentences analyzed.

In referring to causal relationships, the word after may also be used, for example meaning a9., "considering; because of." This meaning, quite different from those previously discussed is found in 12 of the 104 sentences analyzed. An example of one of these sentences is the following:

- a9. "Are they going to kill him now after he hit the apple?"
(YC5 P261 L10)

It would seem that in order to understand the meaning of the word after as it appears in over 80% of the sentences analyzed from the textbooks, the reader would have to understand five different meanings of this word. The variations in the meanings, time, space, causal relations, may make this word particularly difficult for children to understand. Because of the high frequency of after and the large number of definitions it was decided to include this word in the tests. Results of the tests will be reported in Chapter 5.

Seven meanings of after appear infrequently (a1., a2., a7., a8., a10., a11., a12.). Three of these meanings (a1., a11. and a12.) were not characterized by any of the sentences analyzed.

Seven sentences were coded n/a (non-applicable) meaning that

the definitions provided did not define the meaning of the word as used in the particular sentence. The following example illustrates the inability to code some of these sentences:

"Every day he went to his stables to see that the animals were well looked after." (GB5 P110 L18)

Always

The word always, with a frequency of 42, has two definitions which account for all of the sentences analyzed containing this word. Both definitions are temporal in origin, al 1. "every time; at all times," and al 2. "all the time, continually."

These definitions are very similar but their differences can be seen in the following examples. Consider the sentences "That student is always coming in late," and "That student always comes in late." The latter sentence means there is never an occasion when that student does not come in late, whereas the former means that he is very often late, though not necessarily on every possible occasion. Pearce (1970, 1971) suggests that in the case above, the latter sentence is a purely objective statement of fact, the former indicates an attitude toward the fact described. Quite likely the subtle differences in meaning of this word alter the author's intended message to the child reader.

Before

In order for the upper elementary school child to fully comprehend the meaning of the word before 67% of the time it appears in the readers, he would have to understand two meanings. These

meanings "in front of, in advance of, ahead of" and "previously to the time when" are illustrated by the following sentences. Meaning b1. refers to a spatial concept, b8. to a temporal concept.

b1. "He was staring at Chouchou, who was lying in his usual position before the fire." (GB5 P140 L15)

b8. "She would wait until the last moment before she fled."

(GB4 P344 L16)

In understanding the above two sentences, the reader is required to know the definition of before as a preposition meaning "in front of" and as a conjunction meaning "previously to the time when."

Of the 100 times this word was analyzed, four of the eight definitions were so infrequently represented as to discourage any amount of instructional time on the part of teachers being spent on their distinctiveness. These meanings, as can be seen from Table 4.3, are b3., b4., b6. and b9.

Five sentences from those sampled containing this word could not be coded according to the provided definitions, and were recorded as n/a. Sentences of this nature referred to "before long" or to an illusory figure or being appearing in the mind only. This latter instance is illustrated by the example, "Before his eyes danced the image of the little red gnome at Janina" (LE6 P48 L1).

Research by Hatch (1971) investigated the difficulties kindergarten and second grade children have responding manipulatively to verbal commands structured around the words before and after. Both age groups responded more accurately when order of mention was the same as the order of the action required, such as "Move a yellow

one before you move a green one." Hatch concluded that temporal order is an important variable to be considered in the child's comprehension of time connectives.

Similar results were compiled by Clark and Clark (1968). They found that when order of mention of events in a sentence corresponds to the order of occurrence of the events themselves comprehension and memory are facilitated.

Using kindergarten children to investigate understanding of sentences which contain a temporal subordinate clause, Amidon and Carey (1972) reached similar conclusions. These researchers reported sentences such as "Move a blue plane first, move a red plane last" are easily interpreted by the 5 year old, but sentences like "Move a blue plane before you move a red plane" are difficult.

In light of these studies it may be that difficulty of temporal order carries over to the reading and comprehension of sentences. There are a number of examples in the readers such as the ones which follow that may prove to be especially difficult for children to comprehend.

"Before going into the hut, she helped Nanow feed the dogs" (YC5 P137 L12) and

"Before he had been moving an hour the first chill flakes of snow began to sting his face." (YC6 P145 L5)

Because of the high frequency of occurrence, the number of definitions and existing research, the word before was included in the tests for this study.

Ever

The word ever appearing 60 times in the sentences analyzed is characterized by three meanings. 83% of the time, ever appears as meaning e1., which is illustrated by the following:

e1. "It was the longest speech Tom had ever heard from Riley."

(GB6 P351 L12)

Definition e2. accounting for 15% of the sentences analyzed containing this word, is also time oriented. Whereas definition e1. means "at any time," e2. means "at all times; always." Although this distinction seems obvious to the adult, it may cause some problems to children who confuse the meanings of the words, any and all. Sentences coded e3. rarely appeared in the readers.

Just

Having fourteen definitions, the word just appears in the readers 111 times. Six of the definitions were not represented by any sentences and three definitions were infrequently represented in the sampled sentences.

Thirty-six of the 111 sentences were coded j13., meaning "only; merely." This definition is represented by the following:
j13. "I'm mighty lonely here with just you and the chickens for company." (LE4 P18 L8)

Twenty-two of the 111 sentences were analyzed as representing j10., "almost exactly." Both of these definitions (j13. and j10.) do not refer to time. In fact, of the fourteen definitions, only one is time based (j11.).

Though having a high frequency and large number of definitions,

just was excluded from the multiple choice test. The reader will remember that one of the four distractors on this test was a response based on another time meaning of the tested expression than the one intended. Because this criterion could not be met, just was excluded from the test.

Last

Of the 60 times this word was isolated, 19 appeared in Series A, 16 in Series B and 25 in Series C. There are thirteen definitions for last listed in The Intermediate Dictionary. As can be seen from Table 4.3, five of these definitions were not represented by any of the analyzed sentences. Another five definitions appeared so infrequently as to discourage commenting upon their peculiarities.

In over half of the occasions last was isolated, it appeared as the expression 'at last.' Such sentences as
 1 11. "At last one egg shell after another cracked, and out came the tiny ducks." (GB4 P70 L8) were frequent.

The second most commonly occurring meaning of this word was not time oriented. This meaning, 1 10., adjectival in form, refers to "being at the end, coming after all others" such as, the last page of the book.

Last was chosen for inclusion in the tests because of its relatively high frequency and large number of meanings.

Never

An analysis of the sentences sampled isolated the word never 59 times. The Intermediate Dictionary lists two definitions.

Fifty-seven of the 59 occurrences of this word are illustrated by the meaning explicit in the following sentence:

nrl. "Henri never slept under a canoe, unless it was storming."

(YC5 P281 L3)

In this case never means "not ever, at no time."

One sentence was coded n/a. This sentence contained the expression, "never mind." Never appears in the cloze test.

Now

Appearing third highest in frequency in the readers at 176 times is the word now. There are eleven common definitions of this word, but also included as analysis criteria were some 'now expressions,' "just now," "now and again," and "now and then," making a total of fourteen definitions. These 'now expressions' make up a very few percent of the total sentences analyzed.

The distribution of now is consistent throughout the reader series, 59 appearing in Series A, 54 in Series B and 63 in Series C.

The largest majority of the sentences analyzed were coded nl. "at the present time." This meaning is illustrated in the following sentence:

nl. "It's not bad now, but if a wind blew up you might be trapped."

(GB4 P30 L13)

In 18% of the sentences containing now, this word introduces or emphasizes, meaning nl0. Used in this way in the hands of a skilful writer, now can be helpful in setting a mood, or developing characterization. As the following examples illustrate it is a technique of "story telling" writing:

n10. "Now everybody knows that the Coyote is the wisest animal in the mountains." (G4 P60 L10)

n10. "Dark brown, now—that's the color she has a fancy for."
(YC6 P367 L12)

This usage of now is not frequent in the spontaneous conversation of children. Because of this and owing to the frequent usage of now in this somewhat uncommon way in the reader, instruction and practice of this meaning might be profitable.

Three of the fourteen definitions (n7., n11. and n12.) were not represented by any of the sentences, a further five were so infrequent as to discourage specific instruction and practice.

Now was tested in both the multiple choice and cloze tests.

Often

Often appearing only 25 times in the readers, has only one definition. This meaning ofl., "in many cases, many times," accounted for all of the sentences analyzed containing this word.

Once

The dictionary lists six definitions for once. A further nine meanings are sufficiently commonplace in daily conversation to include them in the analysis criteria. These expressions include "all at once," "at once," "for once," "once and again," "once and for all," "once in a while," "once or twice," "once over," and "once upon a time." The expression at once (o8.) was divided into o8A. and o8B. The meaning of o8A. is "immediately," such as "Come at once," and of o8B., "at one and the same time," as "Everyone shouted at once."

Three of the fifteen definitions appeared frequently enough to comment upon. One third of the 61 sentences were coded o3., "at some one time in the past." Also appearing frequently was o8A., at once meaning "immediately." Though both these meanings refer to time, one refers to some time in the past (o3.) and one to the present (o8A.). The sentences below illustrate these two very different meanings of the same word.

o3. "He had once met the Winged Monkeys in the land of the West, and he did not wish to meet them again." (LE6 P15 L12)

o8A. "At once he recognized Agba." (YC6 P29 L19)

The other frequent meaning of once is o1., meaning "one time." This meaning of once refers not to time, but to frequency, number. "He comes once a day" illustrates this meaning. A child understanding more than 70% of the times this word appears in the readers realizes the word once can refer to frequency, or can refer to some time in the past or to the immediate. Because of the obvious problems in comprehension that may arise, this word was included for investigation in the cloze test.

Of the fifteen definitions, eight did not appear at all in the readers. Four of the definitions (o1., o5., o9. and o15.) appeared so infrequently as not to warrant instructional time being spent on them.

Six sentences were coded n/a. These sentences contained the expression "once more," meaning "once again." None of the provided definitions accounted for this meaning.

Presently

Of the eighteen expressions analyzed, this word recorded the lowest frequency. Of the 9 times it appeared, 5 occur in Series A, 0 in Series B and 4 in Series C. All 9 sentences were represented by meaning pl., "before long; soon."

Presently is almost unheard of in conversation. As it also appears so infrequently in written form it was not included in either test.

Since

The sentence "Since he has no teeth, he chews his food between his knees or elbows" (GB6 P194 L7) represents the meaning of since occurring one third of the time in the readers. In this sentence since means "because" and is concerned with causal relations rather than time.

Though this word has eight definitions, three meanings represent the majority of since sentences. Besides meaning sn8. illustrated above, two 'time' meanings of since occur, sn3., "continuously, or counting from the time when" and sn5., "from then till now." As far as the investigator is concerned the meanings of these definitions are the same, their differences occur in the way the sentences are constructed. For example, consider the sentences "Charles has worked hard since he left school" and "He got sick last Saturday and has been in bed ever since." Both sentences convey the same general meaning but in the first sentence the specific time or place mentioned appears at the end of the sentence, following the since. In the latter sentence the time or place since the action is

given first and the word since follows. More specific information is given sooner in the latter sentence which represents meaning sn5.

The reader in order to understand the word since 75% of the time it appears in textbooks must have both the causal and temporal peculiarities understood. Possible difficulties may result over these varied meanings. Since was included for further investigation in the multiple choice test.

Soon

Four definitions are entered in The Intermediate Dictionary for the word soon. Three of these meanings refer to time, the other, to a state of being. Two definitions (so2. and so4.) were not represented by any of the sampled sentences. Meaning so2. refers to time, so4. to a state of being. The exclusion of these two definitions from readers makes the understanding of this word somewhat easier, for the remaining definitions are both time oriented.

Of the 38 times soon appears in the readers, 32 are characterized as sol., "in a short time; before long." The remaining sentences were coded so3. meaning, "promptly, quickly." These meanings appear to be sufficiently dissimilar as to produce few confusions in comprehension.

Suddenly

The Intermediate Dictionary lists one definition for suddenly, "in a sudden manner" (sl.). In order to investigate the root form of this word, "sudden," three additional definitions for criteria purposes were included. Of the 43 times this word was isolated, it appeared as

meaning s1. 36 of these times. In order to understand suddenly (in a sudden manner) the reader must understand the meaning of sudden. As can be seen from meaning s3. and s4. sudden can refer to "not expected" or to "quick, rapid."

s3. "Just before the aircraft lifted, a sudden squall struck and tipped her at a sharp angle." (GB6 P204 L6)

s4. "That would mean sure, sudden, painless death." (LE4 P20 L87)

These varied meanings in the root word may complicate the understanding of the derivation suddenly.

Then

The most frequently appearing time expression isolated in the readers was the word then. This word occurred 238 times in the sentences sampled. The Intermediate Dictionary lists nine definitions, five of these meanings are time based. After coding the sampled sentences, it was found that two of the nine definitions were not represented. Four definitions were represented insufficiently to comment upon.

Definition t5., "next in time or place," appeared most frequently. Also occurring frequently were definitions t1., t4. and t8. These definitions are illustrated by the following sentences taken from the readers:

t1. "But one day, at thirteen, he suddenly began sketching two Red-Breasted Mergansers. Then as now, each stroke was swift, sure, exact." (LE6 P26 L21)

t4. "Then I had a letter from each by the same post." (YC6 P251 L26)

t5. "Then he ran to the palm-tree and rubbed, and rubbed and rubbed himself against it." (YC5 P241 L3)

t8. "Why are you weeping then?" asked the Swallow; "you have quite drenched me." (GB6 P154 L7)

T1., "at that time," t4., "soon afterwards" and t5., "next in time or place" are time based. T1. refers to an occurrence or event happening at a specific time. T4., "soon afterwards" refers to an event happening a short time later. The last time definition, t5., refers to events following consecutively one after each other. These definitions appear to be sufficiently dissimilar. On closer inspection though, this latter definition refers to order of events, while t4. refers to duration of time and t1. to a specific time.

The remaining common definition of then is t8., "in that case; therefore," as in "If Harry broke the window, then he should pay for it." This definition is based on causal relations.

A reader in order to understand 94% of the sentences in which then appears would have to understand three aspects of time, order of events, duration, and a specific time as well as understand the implications of the causal statement, "in that case, therefore."

Because of the problems these diverse meanings could create, then was investigated in both the multiple choice and cloze tests.

Until

Appearing 60 times within the sentences sampled, four definitions characterize this word. In one half of the sentences in which until appeared it meant "up to the time when," meaning u2. The sentence "My crew are sworn to secrecy until I give them the O.K."

(YC6 P357 L10) illustrates this meaning.

Seventeen of the 60 sentences were coded as reflecting meaning u4., "to the degree or place that." For example:

u4. "Then he managed to pull his jaws apart and chewed loudly and visibly, tossing his head, opening his mouth wide till Betsy could see the sticky brown candy draped in melting festoons all over his big white teeth and red gullet." (YC5 P89 L7)

Also appearing frequently, one sixth of the time, was until meaning, "up to the time of," as in "It was cold from Christmas until April." Whereas meaning u2. refers to up to the time of a specific event or occurrence, this latter meaning, refers to the time preceding a definite time, for example in this case, a month of the year.

Because of the subtleties of these meanings, the word until was chosen for test purposes.

When

A common time expression found in the readers was the word when. This word has seven definitions, six of these were represented by sentences in the readers. Six of the definitions are time based, one refers to causal relations. The most frequently appearing way when was used was w4., "at which time; and then." One hundred and twenty of the 237 sentences analyzed with this word represented this definition. The following sentence illustrates this usage:

w4. "Then when they have rested, they cut and break my pretty branches and scatter my leaves." (GB4 P194 L9)

Seventy-five of the 237 sentences were coded as w2., "at the time that," as "Rise when your name is called." Very similar in meaning

to this is definition w3., "at any time that" as "He is impatient when he is kept waiting." These three definitions, all referring to time, characterize 96% of the sentences containing this word sampled from the textbooks. The similarity of these meanings may cause comprehension difficulties for children. When was further investigated in both the multiple choice and cloze tests.

While

Of the four definitions of while, w1 2., "a particular time" is considered archaic. This usage of while did not characterize any of the 63 sentences analyzed.

Table 4.3 lists five definitions for the word. Included for analysis criteria was the word awhile. Thirty-nine of the 63 sentences containing while were coded w1 3., "during the time that; in the same time that; in the time that." Sentences such as "Did you leave the cart while I was inside?" (GB6 P254 L20) were frequent.

While referring to "a time, space of time," such as "a long while" accounted for 11 of the 63 sentences. Used in this way, the word functions as a noun. Appearing as often as this, is the word awhile, "for a short time."

These definitions illustrate the functions this word can assume in sentences. In w1 3., while functions as a conjunction, in w1 1. as a noun and in awhile as an adverb.

While appears in the multiple choice test.

SUMMARY OF TEXTBOOK FINDINGS

Results of the analysis of the textbooks have been reported in this chapter. Some of the selected time expressions appear frequently in the readers, while others appear infrequently.

It was found that a number of similar characteristics describe the majority of the expressions and that these characteristics may contribute to comprehension difficulties in reading. These characteristics are outlined below.

A large number of definitions are associated with most of the expressions, for example, just has fourteen, once, fifteen, now, fourteen, after, twelve. Not only are there a large number of meanings, but these meanings often pertain to a number of different concepts. Temporal and spatial properties and causal relations are implicit in a number of the definitions. Often within broad concepts such as these, properties of these concepts were defined. For example, within the definitions grouped as temporal in nature, meanings were found which dealt specifically with duration, order of events and indefinite time.

Unusual and archaic meanings were discovered. A meaning for now heard very infrequently in conversation, represented a number of the sampled sentences containing this word. One meaning for while is now considered archaic.

Further, these expressions were found to function as a number of different parts of speech in sentences. They most often appeared as adverbs or adverbials, but could also function as conjunctions, prepositions and adjectives.

Many of these characteristics, multiple meanings, unusual meanings, diverse syntactic patterning, were recognized in the sampled sentences. Therefore, the investigator suggests that the child reader would have to possess an in-depth understanding of the expressions in order to comprehend much of his reading textbook.

Chapter 5

ANALYSIS OF TEST RESULTS

The analysis of the results of the multiple choice and cloze tests are presented in this chapter. The data are reported in table form and discussion and interpretation follow.

The reader is reminded that investigation through these tests constitutes an exploratory facet of this study. The tests themselves are limited in scope and therefore only generalizations and trends can be discussed.

Divided into two sections, part one reports analysis of multiple choice test results, part two, analysis of the cloze test results.

ANALYSIS OF MULTIPLE CHOICE TEST

Reliability

Using the Kuder Richardson 20 formula to compute test reliability, the 25 item multiple choice test achieved a reliability coefficient of .5834 for the grade four sample, and .7483 for the grade five sample.

Item Difficulty and Item Discrimination

Tables 5.1 and 5.2 report the item difficulty index and item discrimination of each test item at both the grade four and five levels.

TABLE 5.1
ITEM DIFFICULTY INDEX OF MULTIPLE CHOICE ITEMS USED IN ACTUAL TESTING

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Gr. 4	.42	.60	.80	.57	.51	.85	.54	.80	.60	.68	.48	.91	.42	.68	.40	.60	.48	.91	.65	.62	.68	.34	.62	.28	.54
Gr. 5	.53	.52	.76	.56	.59	.73	.66	.76	.62	.64	.49	.84	.50	.70	.45	.60	.60	.88	.62	.77	.76	.18	.76	.32	.62

TABLE 5.2
ITEM DISCRIMINATION OF MULTIPLE CHOICE ITEMS USED IN ACTUAL TESTING

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Gr. 4	.38	.15	.63	.46	.46	.05	.52	.68	.57	.55	.62	.79	.49	.20	.33	.32	.20	1.05	.20	.28	.66	-.04	.67	-.21	.39
Gr. 5	.46	.29	.57	.64	.66	.38	.72	.44	.23	.49	.53	.65	.57	.52	.45	.60	.62	.55	.71	.51	.75	.20	.71	.01	.54

Student Responses

The percentage of students who chose answers (a) (b) (c) and (d) are reported in Table 5.3. A legend appearing directly below this table refreshes the reader's memory as to the significance of the distractors.

Several facts become apparent from an analysis of the table. Sixty percent of the children in the entire test sample responded correctly to the test items. Also, a slight increase in the percentage of correct answers between the fourth and fifth graders is evident, the latter scoring higher. The errors made could be ordered according to type. The most frequent error was (b), the response contrived by the investigator after considering another time expression than the one being tested. Next in frequency were children who chose answer (d), a non-time meaning of the tested expression. Approximately 8% of the students chose the response which resulted from another time meaning of the tested expression. The same order of incorrect answers held at each grade level.

Table 5.4 lists the words tested and the percentage of students who chose the correct and incorrect answers. Two tables which show the distribution of the correct answers and distractors at each grade level and for each expression are contained in Appendix H. Because these results vary little from the combined four, five sample, the major findings were extracted from Table 5.4.

Soon and last presented the least amount of difficulty to the students. Eighty-three point four nine percent of the students responded to test items investigating soon, 78.30% to last.

TABLE 5.3

SUMMARY OF STUDENTS' ANSWERS ON MULTIPLE CHOICE TEST

	Percentage of Students Who Chose			
	(a)	(b)	(c)	(d)
Grade 4	60.23	18.97	8.23	12.57
Grade 5	61.35	18.14	7.72	12.79
Total Sample	60.98	18.42	7.89	12.72

Legend:

- (a) correct answer
- (b) a time expression other than the one being tested
- (c) another time meaning of the tested expression
- (d) a non-time meaning of the tested expression.

TABLE 5.4

SUMMARY OF STUDENTS' ANSWERS ON MULTIPLE CHOICE TEST
BY INDIVIDUAL EXPRESSION

Tested Word	Percentage of Students Who Chose			
	(a)	(b)	(c)	(d)
after	73.58	6.60	10.38	9.43
before	57.55	21.46	9.67	11.32
last	78.30	3.77	6.60	11.32
now	46.23	12.26	16.98	24.53
since	59.20	25.47	8.02	7.31
soon	83.49	7.08	7.55	1.89
then	45.91	27.04	9.12	17.92
until	64.15	22.64	5.19	8.02
when	66.67	16.98	3.77	12.58
while	60.06	15.41	3.77	20.75

The words then, now and before are shown to present the most difficulty to the entire test sample. These words share characteristics that may affect their comprehension in print.

For instance, each of the words have a large number of meanings. The Intermediate Dictionary lists nine for then and before and fifteen for now. The large number of meanings no doubt makes more possibilities for different usages.

Not only can they appear with more than one meaning, but as was noted in Chapter 4 definitions of these words refer to entirely different concepts. Almost all of the meanings of these three words are time based. If the essence of time does complicate the understanding of a word, the meanings of these words may be particularly difficult to understand. Besides the subtleties existent in the time meanings are the definitions referring to causal, consequential and spatial relationships. For example the word before has a number of meanings which represent spatial properties such as "Walk ahead of me." It also has a meaning which could be referred to as consequential, "I will die before giving in." Existence of these diverse definitions requires the child to be flexible in his interpretation of the sentence material.

Lastly, these words can also assume several functions in sentences, at times being conjunctions, at times adverbs, etc. The words then and now appear primarily as adverbs in the reader series. Recent literature previously reviewed suggests that children have particular problems understanding adverbs. In 207 of the 234 then sentences, the word then functions as an adverb.

It has been shown that the three words eliciting the most errors share several characteristics. The suggestion has been made that their difficulty in comprehension may be associated with these. If this is valid, it would seem that those words creating the least difficulty in comprehension would not share these similarities. Last and soon were understood more often than the other words tested. As was suggested in Chapter 4, the word soon should present few confusions since over 90% of the sentences coded represented soon in one way.

Last appeared as the expression "at last" in over half of the sentences. Though last does have thirteen definitions, ten of these were represented insufficiently to comment upon. In only 4 of the 60 sentences analyzed did last function as an adverb. These findings seem to confirm the original suggestions as to possible reasons that children find certain time words difficult to comprehend.

ANALYSIS OF CLOZE TEST

Student Responses

A summary of the students' answers on the cloze test is reported in Table 5.5. It can be seen that almost three-fifths of the children were able to answer the test items correctly. The grade five children responded with a greater percentage of correct answers and semantically acceptable errors than did those in grade four.

As can be seen from Table 5.6 the most difficult word for the children to understand, accumulating the lowest percentage of correct

TABLE 5.5

SUMMARY OF STUDENTS' ANSWERS ON CLOZE TEST

	Number of Test Items	Percentage Correct	Percentage Semant. Unaccept.	Percentage Semant. Acc.
Grade 4	25	55.64	39.39	4.97
Grade 5	25	62.06	32.73	5.21
Total	25	59.92	34.95	5.13

TABLE 5.6

SUMMARY OF STUDENTS' ANSWERS ON CLOZE TEST
BY INDIVIDUAL EXPRESSION

Words Tested	Number of Test Items	Percentage Correct	Percentage Semant. Unaccept.	Percentage Semant. Acc.
before	5	59.60	40.40	0
never	5	69.49	30.51	0
now	5	72.53	19.80	7.68
once	5	52.12	36.57	11.31
then	5	45.86	47.47	6.67

answers and the highest percentage of semantically unacceptable errors was then. Now presented the least difficulty. Though the word once was understood by just over one-half of the test sample, 11% of the children who responded with an alternate answer, did so with one that was semantically acceptable.

The tested words can be ordered from least to most difficult for the children to understand. The order is as follows: now, never, before, once and then. This order of difficulty holds for the grade levels analyzed separately as reported in Table 5.7.

An analysis of the errors made at both grade levels shows then as having the greatest percentage of semantically unacceptable responses.

Comparison of Student Answers on Multiple Choice and Cloze Tests

To some extent the results of the cloze test can be compared to results on the multiple choice test. Three words, then, before and now appeared on both tests.

Referring to Table 5.4, before was understood by 57.55% of the students on the multiple choice test. On the cloze test the results were similar with 59.60% of the students answering correctly.

Whereas then on the multiple choice test was the second most difficult expression to comprehend, it appeared as the most difficult on the cloze test. Earlier in this chapter the investigator suggested that the presence of a number of characteristics exhibited by this expression, may affect the child's ability to comprehend it. Investigating further, the cloze test items which contained the word then, could all be coded t5., "next in time and space." This is perhaps a particularly difficult meaning for children to understand; in any

TABLE 5.7
SUMMARY OF GRADE 4 AND GRADE 5 ANSWERS ON CLOZE TEST BY INDIVIDUAL EXPRESSION

Words Tested	Number of Test Items	Percent Correct		Percent Semantically Unacceptable		Percent Semantically Acceptable	
		Gr. 4	Gr. 5	Gr. 4	Gr. 5	Gr. 4	Gr. 5
before	5	52.73	63.03	47.27	36.97	0	0
never	5	64.85	71.82	35.15	28.18	0	0
now	5	66.67	75.45	26.67	16.36	6.67	8.18
once	5	50.91	52.73	38.18	35.76	10.91	11.51
then	5	43.03	47.27	49.70	46.36	7.27	6.36

event, it is the most common way then is used in the textbooks.

Completely opposite to the trend that seems to be developing between items investigated on both tests, are the results of now.

Appearing as one of the expressions causing the most comprehension difficulties on the multiple choice test, now appears as the word presenting the least difficulty to students on the cloze test. The items in which now was tested on the cloze were analyzed. Of the five items, three tested the same meaning of the word, n1., "at the present." Of the remaining two items, one represented meaning n3., "the present, this time," another time based meaning, and the other item could have been coded n8., "under the present circumstances." These items then account for three different meanings of now (n1., n3., n8.) and two types of meanings, temporal and circumstantial. Possibly then, the fact that now appeared in continuous prose, in all cases being preceded and succeeded by context, made this word easier to understand in the cloze test.

STATISTICAL COMPARISON OF TEST RESULTS ON MULTIPLE CHOICE AND CLOZE TESTS

In order to establish if the results of the tests between the grade levels were statistically significant, the data were subjected to a t-test. Both tests were found not to be significant at the .05 level. The very small increase in comprehension as indicated by the test scores may support previous research in this area that temporal concepts develop slowly. This information is reported in Table 5.8.

TABLE 5.8
COMPARISON OF GRADE 4 AND GRADE 5 MULTIPLE CHOICE AND CLOZE TEST SCORES

	Number of Subjects		Range of Scores		Mean Score					Variance		Standard Deviation		Degrees of Freedom	T	Prob.
					Gr. 4	Gr. 5	Gr. 4	Gr. 5	Gr. 4	Gr. 5	Gr. 4	Gr. 5				
Multiple Choice	35	71	5-22	5-24	15.09	15.34	12.25	20.11	3.50	4.48	104	.3141	.75*			
Cloze	35	71	2-22	3-24	13.62	15.50	22.36	18.49	4.71	4.30	104	1.9211	.06*			

* Not significant at .05 level.

Cloze Test Reliability

In order to establish some reliability of the acceptance of errors as semantically correct, a random selection of twenty percent of the test papers was given to two independent people who acted as judges. As was used to calculate the inter-judge reliability on the multiple choice test the Arrington formula was used here also.

The percentages of agreement between the three judges were as follows:

Independent Judge	Percentage of Agreement
1 + 2	88.33
1 + 3	93.65
2 + 3	91.94

Judge 1 was the investigator.

SUMMARY OF TEST RESULTS

Sixty percent of the students' answers on both the multiple choice and cloze test were correct. On both tests the grade five students scored higher than the grade four students. Though the differences in scores between the grade levels were not statistically significant, the higher scores on the cloze test for the grade five students may show a greater awareness of, and facility to use context to aid comprehension. The fifth graders made more semantically acceptable errors than the younger students showing an overall better understanding of embedded time expressions.

Choice of distractors on the multiple choice test followed a pattern which held at each of the grade levels. The errors showed

little progress towards increased temporal understanding of the expressions, as the majority of the incorrect responses were based on a different time word than the one intended.

Words most difficult to understand on the multiple choice test were then and now, the least difficult soon and last.

On the cloze test the least difficult word was now, the most difficult, then. The most semantically unacceptable errors were associated with the word then.

By referring to the descriptions of these words in Chapter 4, possible reasons for comprehension difficulty were explored.

Chapter 6

SUMMARY, CONCLUSIONS AND IMPLICATIONS

Because of its abstract nature, time, even though frequently referred to in everyday living, is a concept that children find difficulty understanding. Educational research has supported the premise of slow temporal development, and has shown a high proportion of references to time in instructional textbooks.

The present study was designed to examine the understanding upper elementary school children have of time concepts appearing in their reading textbooks.

SUMMARY OF THE STUDY

The research was divided into two parts. The major section consisted of sampling nine basal readers at each of the grade four, five and six levels, the purpose being to isolate words and groups of words which were thought to embody an element of time. The second section of the study has been termed exploratory. Two different measures were constructed which served to investigate the understanding grade four and five children have of a selected number of time expressions. Both the tests themselves and the number of children were limited.

Two thousand two hundred and twenty-seven time expressions from 300 sentences were isolated for initial consideration. These expressions represented 47 single words or temporal ideas expressed in

a few words, e.g., "on and on." Eighteen expressions which appeared high in frequency in the readers, and which functioned most often as adverbials in the sampled sentences, were selected for in-depth analysis. The focus of the study then concentrated on these words.

A 25 item multiple choice test and a cloze test of 25 items were constructed to investigate understanding of time expressions which appeared in isolated sentences and within continuous prose. The multiple choice test was constructed so that an analysis of the source of errors would be possible. Generally, the time expressions which were included on both tests were chosen because of their high frequency within the readers. In the case of the multiple choice test the selected words also had to conform to the criteria used for distractors.

Test reliability and suitability for the particular age group were established through pilot studies. One hundred and six grade four and five children from a school within the Edmonton Public School System were included in the actual testing.

The data obtained were subject to a reliability formula, item analysis and t-test procedures.

FINDINGS AND CONCLUSIONS

The following questions were formulated at the outset of this study. Findings and conclusions pertinent to each question are reported.

Question #1. Is there a high frequency of time expressions found in reading textbooks at the grade four, five and six levels?

Forty-seven expressions recognized as referring to time were

found in high frequency in the reading textbooks. From an analysis of 300 pages, 2,227 of these expressions were isolated. The average total density per page then was 7.42. This means that on every page in his reader a child may be exposed to an average of 7 time expressions.

One thousand five hundred ten instances of the eighteen selected expressions were isolated. Concurring with research by Jarolimek and Foster, Kelty, and others, a high frequency of time expressions exist in reading texts.

Question #2. What time expressions in reading textbooks are children exposed to in grades four, five and six?

Table 3.2 lists the 47 most frequent time expressions. It is realized that this group itself does not exhaust the possible time expressions, but does serve as a good indication of the references to time appearing in texts.

Question #3. Is there a greater number of time expressions found at any particular grade level or within a particular reader series?

This question must be considered from the point of view of highest total frequency as well as average density per page. The greatest number of time expressions were found at the sixth grade level, the average density per page being 5.48. Series C contains the most time expressions, the average density per page in this reader series being 6.24. These figures are based on the selected expressions.

Question #4. How do time expressions function in sentences contained within reading texts at the grade four, five and six levels?

It was found that the majority of the selected time expressions were able to function in a number of ways in sentences. In the majority of the sentences analyzed, the time expressions appeared as adverbs or adverbials. Other parts of speech common to these expressions were adjectives, conjunctions and propositions. Research by Gleason and Frogner suggests that the presence of adverbs and adverbials within sentences necessarily complicates the syntactic patterning of the sentences, a factor which may compound still further the problems of children's understandings of the differing meanings of these terms.

Question #5. What range of meanings can these time expressions assume in reading texts?

References to time account for the majority of multiple meanings. Included in this group are references to duration, order of occurrence and the past, present and future. Other meanings it was found, refer to causal and consequential relationships, frequency and spatial concepts. A small number of meanings were very distinctive. Those regarded in this way were archaic meanings and meanings no longer used in conversation but still in evidence in print.

Question #6. Do these written expressions of time present comprehension problems to children in grades four and five

- (a) in single sentences?
- (b) in continuous prose?

(a) Only sixty percent of the 106 children responded positively to the correct answers on the multiple choice test. The distribution of the incorrect answers among the test distractors showed that most

often children did not realize that a time element was missing from the sentence, or could not respond correctly to the time element in the stimulus sentence.

(b) The same percentage of the total test sample responded correctly to the cloze test items, supporting Kelty's findings of low comprehension of time expressions within embedded discourse. Grade five students performed better than the younger students as indicated by a higher incidence of correct answers and semantically acceptable errors. This result supports research by Harrison and Pistor who reported growth in temporal concepts with increase in chronological age and grade placement.

Question #7. Which written time expressions prove most difficult for grade four and five children to understand?

Bearing in mind the limitations of the testing procedure, a number of expressions proved to present comprehension problems to both grade four and five children. Presenting the most difficulty to the entire sample within single sentences were the words then, now and before.

Within continuous prose, the word then was clearly the most difficult for the entire test sample. Possible reasons for difficulties with these words have been explored, these suggestions being based on a large number of definitions, meanings exploring several concepts, and ability to assume several functions in sentences. The difficulties with these words might also be compounded by the fact that the child, being unaware of the subtleties in the multiple meanings of the words, is unaware of the fact that he does not

understand the words in some contexts.

Question #8. Which written time expressions prove least difficult for grade four and five children to understand?

Least difficult for the entire sample on the multiple choice test were the words soon and last. Least difficult of the words tested on the cloze test was now. The discrepancy which exists with the word now between the two tests has been explained in part by the additional context supplied in the cloze test.

Question #9. When errors are made in understanding time expressions, what type of errors are common?

Both tests were constructed so as to provide information about the types of errors the children were making. On the multiple choice test the distractor which proved most effective was (b) a response resulting from a time word other than the one being tested. Second most effective was response (d) a non-time meaning of the tested expression and least chosen (c) another time meaning of the tested expression. This order of errors held at each grade level. The most common type of error suggests only a very limited understanding of the time expressions. Answer (d) is seen by the investigator as being the furthest removed from the correct response.

Errors on the cloze test were analyzed as being either semantically acceptable or unacceptable with the context of each passage. Most errors were semantically unacceptable, the words chosen making no sense at all in the passage. The majority of the semantically unacceptable errors occurred with the word then, most semantically acceptable with once.

Question #10. Do successive grades reveal a significant general increase of children's understanding of written time concepts?

It was found that the increase in scores between the grade levels did not reveal a significant increase of children's understanding of written time concepts. The mean score on the multiple choice test for grade four was 15.09, for grade five, 15.34. Results on the cloze test, though not significant, were more discriminating with mean scores for fourth graders being 13.62 and for fifth graders 15.50. This result may show a tendency for the older students to use the surrounding context to a greater degree as an aid in comprehension.

LIMITATIONS OF THE STUDY

As the study progressed a number of decisions were made which produced limitations beyond those presented in Chapter 1.

Although four classrooms of students were provided by the Edmonton Public School System, the number of grade five students more than doubled the number of those in the fourth grade. Low grade four enrollment combined with fourth grade absenteeism on the day of testing produced the imbalance. This discrepancy in numbers necessarily limits further the ability to generalize from the small total sample.

Reading textbooks from grades four, five and six were analyzed. The most frequently appearing time expressions were then investigated in grades four and five only. It would have been desirable to investigate children's understanding of time expressions at the three grade levels. Because it was found that the tests did

not discriminate well at the sixth grade level, and since this was an exploratory study, this group of students was excluded from the actual testing.

Further, Chapter 4 reports the many functions the time expressions are able to assume in sentences. As the possibilities of usage increase, so may difficulty of reading comprehension. This possibility was not explored when constructing the tests.

SUGGESTIONS FOR FURTHER RESEARCH

A number of related studies could be designed to investigate various aspects of the present study.

A study which explored other textbooks used in the elementary grades plus general reading materials for this age group would provide more complete information as to what time expressions children are exposed to in print. It may be found within, for example, social studies materials, a predominance of a certain type of time expression.

For manageability purposes a selected group of words were subject to in-depth analysis. Other groups of time expressions exhibiting similar characteristics should be studied. Further, as suggested in Chapter 1, it may be that words found infrequently in readers are those with which the children experience most difficulty because of the children's lack of exposure to such expressions. Investigation into several of these words might be profitable.

The testing procedures of the present study were limited. Further investigation into the understanding of the eighteen selected

expressions would be desirable. More comprehensive in nature, the tests could explore the difficulties children have with many of the multiple meanings of these words. If constructed so as to investigate various definitions, the data could also be analyzed to provide information regarding the many functions these words can assume. The research design of such an investigation would involve a much larger test sample and explore difficulties within the three upper elementary grade levels.

The present study investigates only the written aspect of children's understanding of time. The other communication processes, speaking, writing and listening have been neglected. Interesting studies could be designed to explore children's understanding of time concepts reflected by these different processes.

EDUCATIONAL IMPLICATIONS OF THE STUDY

A number of implications for reading instruction in the classroom arise from the results of this study.

Classroom teachers should be made aware of the high frequency of temporal expressions found within reading texts.

In the light of the test results, several time expressions should be discussed, illustrating multiple meanings, and the various possibilities regarding placement in sentences these words are able to assume. Teachers should also be made aware of the possibility that because their students are not cognizant of the multiple meanings of the time expressions they do not in fact realize they are receiving a less than accurate interpretation of the author's message.

When teaching reading skills it is probably best not to use examples which are weighted in temporal expressions. Their presence may complicate the understanding of the particular idea or concept being taught. Similarly, this should be considered when selecting remedial reading materials.

CONCLUDING STATEMENT

The understanding of temporal concepts can be recognized as developing slowly by parents, teachers and those involved with young children. From classroom experience the realization by the investigator of the obvious difficulties children have with time concepts developed into the present investigation.

This study supports previous research as to difficulties children have with time expressions. Though the majority of previous research has investigated definite time references, this study concentrated on indefinite references to time, in fact, expressions which are commonly overlooked as referring to time. Having classroom teachers aware of the difficulties time expressions may present will help to bridge the gap between the child's temporal understanding and the reception of temporal concepts in print.

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APPENDICES

APPENDIX A

DEFINITIONS TAKEN FROM THE INTERMEDIATE DICTIONARY

APPENDIX A

DEFINITIONS TAKEN FROM THE INTERMEDIATE DICTIONARY

Definitions taken from The Intermediate Dictionary (Dictionary of Canadian English, The Intermediate Dictionary. Toronto: W. J. Gage Limited, 1963).

After (a)

- | | |
|--|--|
| a1. behind in place: | The soldiers marched in line one after another. |
| a2. behind: | to follow after |
| a3. next to; following: | day after day |
| a4. in pursuit of; in search of: | The dog ran after the rabbit. |
| a5. later than the time that: | After he goes, we shall eat. |
| a6. later in time than: | After dinner he can go. |
| a7. later: | three hours after |
| | In after years he regretted the mistakes of his boyhood. |
| a8. about, concerning: | Your aunt asked after you. |
| a9. considering; because of: | After the selfish way she acted, who could like her? |
| a10. imitating; in imitation of: | He wrote a fable after the manner of Aesop. |
| a11. lower in rank or importance than: | A captain comes after a general. |
| a12. for: | named after his cousin |

Always (al)

- | | |
|----------------------------------|----------------------------|
| al 1. every time; at all times: | Night always follows day. |
| al 2. all the time; continually: | Mother is always cheerful. |

Before (b)

- b1. in front of; in advance Walk before me.
of; ahead of:
- b2. earlier than: Come before five o'clock.
- b3. rather than; sooner than: I will die before giving in.
- b4. in the presence of or To stand before the king.
sight of:
- b5. in front; in advance; He went before to see if the road
ahead: was safe.
- b6. earlier: Come at five o'clock, not before.
- b7. until now; in the past: I didn't know that before.
- b8. previously to the time Before she goes, I would like to
when: talk to her.
- b9. rather than; sooner than: I will die before I give in.

Ever (e)

- e1. at any time: Is she ever at home?
- e2. at all times; always: ever at your service
- e3. at all; by any change; What did you ever do to make him
in any case: so angry?

Just (j)

- j1. right; fair: a just price
- j2. righteous: a just life
- j3. deserved; merited: a just reward
- j4. having good grounds; just anger
well-founded:
- j5. lawful: a just claim
- j6. in accordance with just proportions
standards or requirements;
proper:

j7. true; correct:	a just description
j8. exact:	just weights
j9. exactly:	just a pound
j10. almost exactly:	I saw him just now.
j11. a very short while ago:	He has just gone.
j12. barely:	The shot just missed the mark.
j13. only; merely:	He is just an ordinary man.
j14. informal. quite; truly; positively:	The weather is just glorious.

Last (1)

11. coming after all others; being at the end; final:	the last page of the book.
12. after all others; at the end; finally:	He arrived last.
13. next before a specified point in time:	last night, last week, last year
14. on the latest or most recent occasion:	When did you last see him?
15. previous; the one before this one:	The last caller was a woman.
16. most unlikely; least suitable:	That is the last thing one would expect.
17. very great; extreme:	a paper of last importance
18. that remains:	He spent his last dollar.
19. a person or thing that is last:	the last in the row
110. the end:	faithful to the last
111. at last—at the end; after a long time; finally:	So you have come home at last.

112. go on; hold out; continue The storm lasted three days.
to be; endure:
113. continue in good I hope these shoes last a year.
condition, force, etc.:

Never (nr)

- nr1. not ever; at no time: He never has seen a more perfect copy.
- nr2. in no case; not at all; never the wiser
to no extent or degree:

Now (n)

- n1. at the present time: He is here now.
- n2. by this time: She must have reached the city now.
- n3. the present; this time: by now, until now, from now on
- n4. at once: Do it now!
- n5. then; next: If passed, the bill now goes to the
Senate.
- n6. at the time referred to: The clock now struck three.
- n7. a little while ago: I just now saw him.
- n8. under the present I would believe almost anything now.
circumstances; as things
are; as it is:
- n9. since; inasmuch as: Now I am older, I have changed my
mind.
- n10. Now is also used to Now what do you mean? Now you know
introduce or emphasize: that was wrong.
- n11. be careful! please!
- n12. just now—only a few minutes ago
- n13. now and again—from time to time; once in a while
- n14. now and then—from time to time; once in a while

Often (of)

of1. in many cases; many
times; frequently:

Blame is often misdirected. He comes
here often.

Once (o)

o1. one time:

He comes once a day.

o2. a single occasion:

Once is enough.

o3. at some one time in the
past; formerly:

a once powerful nation

o4. even a single time; ever:

if the facts once become known

o5. if ever; whenever; after:

Once you cross the river, you are
safe.

o6. former:

a once friend

o7. all at once, suddenly

o8. at once,

o8A immediately:

Come at once.

o8B at one and the
same time:

Everyone shouted at once.

o9. for once, for one time at least

o10. once and again, repeatedly

o11. once for all, finally or decisively

o12. once in a while, now and then

o13. once or twice, a few times

o14. once over, a single time over

o15. once upon a time, long ago, once

Presently (p)

p1. before long; soon:

The clock will strike presently.

p2. at once

p3. at present; now:

The Prime Minister is presently in
Ottawa.

Since (sn)

- | | |
|---|---|
| sn1. from a past time continuously till now: | The package has been ready since noon. |
| sn2. in the course of the period following the time when: | He has written home but once since he left us. |
| sn3. continuously, or counting from the time when: | Charles has worked hard since he left school. |
| sn4. at any time between some past time or event and the present: | We have not seen him since Saturday. |
| sn5. from then till now: | He got sick last Saturday and has been in bed ever since. |
| sn6. at some time between a particular past time and the present: | At first he refused but has since accepted. |
| sn7. before now; ago: | I heard that old joke long since. |
| sn8. because: | Since you feel tired, you should rest. |

Soon (so)

- | | |
|--|-------------------------------------|
| sol. in a short time; before long: | I will see you again soon. |
| so2. before the usual or expected time; early: | Why have you come so soon? |
| so3. promptly; quickly: | As soon as I hear, I will tell you. |
| so4. readily; willingly: | I would as soon die as yield. |

Suddenly (s)

- | | |
|--|--|
| s1. in a sudden manner | |
| s2. all of a sudden—in a sudden manner | |
| s3. sudden—not expected: | Our army made a sudden attack on the fort. |
| s4. sudden—quick; rapid: | The cat made a sudden jump at the mouse. |

Then (t)

- | | |
|--|---|
| t1. at that time: | Prices were lower then. |
| t2. that time: | By then we shall know the result. |
| t3. being at that time;
existing then: | the then prime minister |
| t4. soon afterwards: | The noise stopped, and then began again. |
| t5. next in time or place: | First comes spring, then summer. |
| t6. at another time: | Now one boy does best and then another. |
| t7. also; besides: | The dress seems too good to throw away, and then it is very attractive. |
| t8. in that case; therefore: | If Harry broke the window, then he should pay for it. |
| t9. but then—but at the same time; but on the other hand | |

Until (u)

- | | |
|----------------------------------|---|
| u1. up to the time of: | It was cold from Christmas until April. |
| u2. up to the time when: | He waited until the sun had set. |
| u3. before: | She did not leave until morning. He did not come until the meeting was half over. |
| u4. to the degree or place that: | He worked until he was too tired to do more. |

When (w)

- | | |
|------------------------------|--|
| w1. at what time: | When does school close? |
| w2. at the time that: | Rise when your name is called. |
| w3. at any time that: | He is impatient when he is kept waiting. |
| w4. at which time; and then: | When his master spoke, the dog gave a joyful bark. |

w5. although:

We have only three books when we need five.

w6. what time; which time:

Since when have they had a car?

w7. the time or occasion:

the when and where of an act

While (w1)

w11. a time; space of time:

He kept us waiting a long while.
The postman came a while ago.

w12. Archaic. A particular time

w13. during the time that;
in the same time that;
in the time that:

While I was speaking he said nothing.
Summer is pleasant while it lasts.

w14. in contrast with the fact that; although:

While I like the color of the hat,
I do not like its shape.

w15. a while—for a short time:

He stayed a while.

APPENDIX B
PARAGRAPH SHORT-ANSWER TEST

APPENDIX B

PARAGRAPH SHORT-ANSWER TEST

Name _____

Directions:

In the second part of this exercise there are 7 stories for you to read. Every sentence in each of the stories is numbered. Following each story there are a number of questions. Some of the questions refer to the numbered sentences contained in the story which you have just read. Answer all questions please.

A. 1. If only she could close her eyes and sleep and sleep, more soundly than every before! 2. But she knew that was something a rabbit must never do, not for a single moment. 3. Even while she was sleeping, she must be on the alert. 4. Her nose must always be smelling, separating out the scents of the forest. 5. Her ears must always be listening, even though they lay flat along her back out of sight.

6. She had so many enemies! 7. The woods were full of them, and in winter they were hungrier than other times. 8. She could expect no mercy from them. 9. Once they caught her scent, they never stopped tracking her down.

Questions

1. In what season of the year does this story take place? How do you know? _____
2. Sentences number 1 and 2 tell us that:
 - a) a rabbit can occasionally close its eyes and sleep soundly.
 - b) a rabbit can feel safe as long as it is asleep with its eyes closed.

- c) a rabbit can sleep soundly but for only a few minutes at a time.
 - d) a rabbit must always be alert, even while sleeping.
3. What must the rabbit be doing, even while sleeping? _____
-

B. 1. Donald's tense hand relaxed its hold on the rifle, and he was about to settle back into the warmth of the beaverskin robe, when a movement at the foot of his bed jerked him once more into startled attention. 2. In the half-shadow cast by the upturned canoe, his eyes made out the form of a large animal. 3. It was a timber wolf, crouched as if ready to spring. 4. The boy felt a chill, like a cold hand, run along his spine. 5. He hesitated for just a second while the chill shook him; then he snatched his rifle and rose on his elbow, but before he could fire, the animal tottered in a queer manner, and then fell on its side at the foot of the bed. 6. Amazed, Donald lowered his rifle and stared. 7. The fallen animal didn't move. 8. It appeared to be dead, although no shot had been fired!

Questions

1. Why did Donald hesitate before he grabbed his gun? _____

2. Do you think something scared Donald even before this story begins?
Why? _____

3. Sentence number 5 means that
 - a) the animal fell on its side at the foot of the bed before Donald could grab his rifle?
 - b) before Donald grabbed his rifle, a chill shook him?
 - c) after Donald fired the gun the animal tottered and fell on its side at the foot of the bed?
 - d) while the chill shook Donald, the animal tottered and fell on its side at the foot of the bed?

4. Sentence number 1 tells us that

- a) after Donald had settled back into his beaverskin robe a sudden movement brought him to attention.
- b) although Donald sensed a movement at the foot of his bed, he was happy to be warm in the beaverskin robe.
- c) at any time there was a movement at the foot of his bed, Donald would instantly become alert.
- d) before Donald was settled back into his beaverskin robe, a movement at the foot of his bed brought him to attention.

5. Find the words in the story which tell us if Donald fired his gun.

C. 1. Then Ootook went outdoors where she could see to work.
2. After patient filing, she managed to cut a barb into the nail
and sharpen the point. 3. Then, using the head of the axe, she
carefully bent the nail into the shape of a fish hook.

4. At last she was ready to return to the water-hole. 5. The
hut didn't provide even a scrap of white cloth to attract the fish,
much less any bait. 6. But Yarrak told her no one had ever fished
in the lake, and so perhaps she would be lucky.

7. She was. 8. Almost immediately Ootook pulled out a salmon
trout. 9. By now she was too cold and hungry to stay out any longer.
10. Picking up the fish before it could freeze, she ran back to the
hut.

Questions:

1. Ootook did not have bait for her hook, why did Yarrak say she
might catch a fish anyway? _____

2. Sentence number 8 tells us that
 - a) Ootook instantly caught a salmon trout.
 - b) Ootook waited a few hours before she caught a salmon trout.
 - c) it took quite a while for Ootook to catch a fish.
 - d) within a very short time Ootook caught a salmon trout.
3. This story tells us that
 - a) Ootook went to the hut to find some bait before she worked at
making a hook.
 - b) Ootook was told that no one had ever fished in the lake but
decided to make a fish hook anyway.
 - c) Ootook cut a barb into the nail, and bent the nail into the shape

of a fish hook after patiently filing.

d) Ootook filed, cut a barb into the nail, bent the nail into a fish hook and then went outdoors to fish.

4. Before Ootook could cut a barb into the nail and sharpen the point, what did she have to do? _____

5. Did it take Ootook a long time to catch a fish? How do you know?

D. 1. Within the next fifteen or twenty minutes the bear had landed half a dozen more good-sized fish. 2. Then, just as the watcher behind the bushes was beginning to grow tired of seeing so many fish caught, the bear seemed to decide that he had enough to provide a good meal.

3. The bear ambled ashore, shook himself, gulped down a trout, and then scrambled over the edge of the bank to where the rest of his dinner awaited him. 4. For a moment he looked proudly at his prizes, several of them still flopping. 5. Then he picked up one and bit off a mouthful. 6. At the same instant, Bedlow put his fingers between his teeth and gave a short whistle.

Questions:

1. Sentence number 3 tells us that
 - a) the bear ambled ashore, and then gulped down a trout while shaking himself.
 - b) the bear before scrambling over the edge of the bank, ambled ashore, shook himself, and gulped down a trout.
 - c) the bear gulped down a trout, ambled ashore and then scrambled over the edge of the bank.
 - d) the bear after scrambling over the edge of the bank ambled ashore, shook himself and gulped down a trout.
2. How long did it take for the bear to catch six fish?

3. At the same time that the bear decided he had caught enough fish, what did the watcher feel? _____

4. Did the bear look at his fish a long time before he ate them?

How do you know? _____

5. Sentences number 5 and 6 mean that

- a) at the same time the bear began eating, Bedlow gave a whistle.
- b) before Bedlow gave a whistle, the bear had started eating the fish.
- c) whenever Bedlow gave a whistle the bear began to eat the fish.
- d) while the bear was eating, Bedlow gave a whistle.

- E. 1. He crouched there for a long time not daring to move, then he got up and ran and ran. 2. It began to rain, but still the poor duckling ran on. 3. At last he came to a shallow little lake. 4. There he swam and dived but he was not happy.
5. Autumn came, and the leaves on the trees fell to the ground. 6. The cold winds blew them about. 7. It would soon be winter, and what would the poor duckling do?
8. One evening some beautiful white birds came out of the bushes. 9. The duckling had never seen birds like these before. 10. They were swans. 11. They spread their beautiful wings and flew away to the warm land of the south.
12. The ugly duckling watched them until they disappeared in the distance. 13. Could he ever forget those graceful happy birds?

Questions:

1. In sentence number 1/ a long time means
 - a) a full minute
 - b) throughout the rest of the summer
 - c) several minutes, perhaps an hour
 - d) several years
2. In this story
 - a) The duckling finds a shallow lake, autumn comes, and he sees some beautiful white birds.
 - b) autumn comes, then the duckling finds a shallow lake.
 - c) the swans fly away to the south, then one evening some beautiful birds come out of the bushes.
 - d) the duckling sees some swans, then he finds a shallow little lake.

3. What time of the day was it when the duckling saw the swans?

4. Read the last line of this story. Did the duckling think he would forget the swans or remember them?

5. The ugly duckling came to a shallow lake. What words in the story tell us that it took a long time for him to get there?

6. In sentence number 9, the word before used here means that

- a) the duckling had never seen birds like this so far this year.
- b) the duckling had never seen birds like this standing in front of him.
- c) the duckling had never seen birds like this at this time of day.
- d) not ever in his life had the duckling seen birds like this.

F. 1. There in the sand beside the brook were two footprints!
2. They were large footprints and had been made by a man.
3. Just when they had been pressed into the sand he could not tell.
4. One thing was sure, he was not the first person to look upon this place.
5. Someone had been here before him.
6. That person might be hiding in the cave now!

7. Sammy was scared.
8. He forgot all about wanting to be an explorer.
9. He just wanted to get out of the cave quickly.

10. Turning, he ran as fast as he could back along the way he had come.
11. He raced over the wet rocks, with the flashlight bobbing wildly up and down.
12. Then he tripped and fell.
13. The flashlight slipped out of his hand and broke as it crashed to the ground.
14. Sammy was left in darkness.

15. "Now what shall I do?" Sammy asked himself.
16. It was darker than the inside of a pocket.

17. Sammy realized that it would be foolish to try to find his way out of the cave.
18. He wasn't sure which way he should take.

19. There was only one thing to do.
20. He must settle down and stay right in this spot until he was rescued, whenever that might be!

Questions

1. How did Sammy know that someone had been in the cave before him?

2. After Sammy broke his flashlight, putting himself in darkness, what did he decide to do?

3. Sentence number 5 means

- a) a person had once been standing in front of Sammy.
- b) someone had been in the cave earlier than Sammy.
- c) prior to Sammy's life a person had been in the cave.
- d) someone was closely following behind Sammy.

4. The story tells us

- a) after Sammy saw the footprints he broke his flashlight.
- b) Sammy decided that someone else might be in the cave after he tripped and fell and before he saw the footprints.
- c) Sammy tripped and fell after he broke his flashlight.
- d) before Sammy saw the footprints he decided to stay in one spot until he was rescued.

5. Sammy decided he must stay in one spot in the cave. For how long was Sammy willing to stay there? _____

6. Sammy asked "Now what shall I do?" because

- a) he was bored with playing being an explorer.
- b) he didn't know which place in the cave he wanted to explore.
- c) Rex didn't follow him and Sammy thought Rex might get lost.
- d) he had just broken his flashlight and couldn't see to get out of the cave.

G. 1. One morning his mother looked at him lovingly, and said, "Timothy, where are your spots now?"

2. Timothy looked and found that they were all gone. 3. His new coat had come gradually while he ate and slept and played.

4. Now he was all one lovely colour like his mother.

5. "At last," he thought happily, "I am really growing up!"

6. But just as he thought that, something happened, something more important than anything that had ever happened to Timothy before.

7. He saw coming towards him through the trees the largest deer he had ever seen. 8. He walked proudly with his head high and on his head he carried branches so like those on a tree in winter that Timothy, for once in his life, could not utter a single word, even to ask a question. 9. He could only stare in admiration.

10. His mother said, very low, "Timothy, that is your father coming to see us." 11. Timothy had never seen his father before in all his life!

Questions

1. Timothy was surprised to see that the spots on his coat were gone. When had his coat changed color? _____

2. What words in the story tell us that Timothy did not see his father everyday? _____

3. Sentence number 6 means:

- a) before Timothy could think something important happened.
- b) in front of Timothy's eyes something important happened.
- c) at no other time had something happened that was so important.
- d) at some time earlier something happened that was just as important as this.

4. Did Timothy usually talk a lot? How do you know? _____

APPENDIX C

MULTIPLE CHOICE TEST USED IN PILOT #1

APPENDIX C

MULTIPLE CHOICE TEST USED IN PILOT #1

Verbal Instructions: In this exercise there are 30 questions. For each question there are four answers. You are to read each question and choose the best completion. When you have found the best answer circle, or underline it. Often you are required to fill in the end part of the sentence, sometimes you are asked to fill in the middle portion. If there are any words which you cannot read, raise your hand and I will help you.

Name _____

1. It was dusk again, and a rising storm made it hard to see ahead when
 - a) they were out of work.
 - b) lessening their chances of getting home.
 - c) they reached a frozen lake.
 - d) they had eaten a good supper.
2. For a moment the narrow cobbled street was empty then
 - a) the people liked oranges.
 - b) it was filled once more.
 - c) the flowers will bloom again.
 - d) this happened at the sound of the siren.
3. While _____, the minstrel's song grew sweeter.
 - a) the king and queen became interested in football
 - b) he had driving lessons
 - c) ago waiting for the annual rainy season
 - d) the king and queen and all the court listened in surprise

4. Peter's good ears caught the sound of footsteps almost as soon
- a) prepare for the worst, he thought.
 - b) by this time the intruder was closer.
 - c) as he had seen the torches.
 - d) he thought.
5. Yet every wild animal went there to die when
- a) his time had come.
 - b) the place was a new playground.
 - c) questioning the reason why.
 - d) it was raining.
6. Since _____ his leg has shrivelled.
- a) you enjoy playing with us
 - b) because of the seriousness of the accident
 - c) learning to sing
 - d) that time
7. They looked again in every part of the room, and then
- a) it was their job to continue the search any way.
 - b) seeing no one, Dorothy asked, "Where are you?"
 - c) they searched, their nerves were on edge.
 - d) it was nearly springtime.
8. He has been to sea but now
- a) his wife's illness he has been living in England.
 - b) each departure he would visit his aging parents.
 - c) a storm blew up.
 - d) he writes books.

9. At last _____ to look at the old pines on the Miller farm.
- a) she went behind the hut
 - b) account, she was happily settled
 - c) row seats in the huge theatre, they were in a poor position
 - d) before in the history of man did so many people want
10. "But Grandfather," gulped Walter when
- a) I was in the hospital, I'm fine now.
 - b) the snow falls let's play in the rain.
 - c) impatiently, how long will we have to wait?
 - d) he could talk once more, "what will they do with Father?"
11. Confined to a wheelchair until _____ he became interested in puppets.
- a) he was eight
 - b) he was tired of dancing
 - c) to a hospital bed
 - d) he learned to skate
12. At last one eggshell after _____ and out came the tiny ducks.
- a) how long the mother had left it unattended cracked
 - b) the nest was destroyed by vultures
 - c) another cracked,
 - d) much smaller than the rest cracked

13. He had saved for a long time before
- a) the bus station waited his aunt and uncle.
 - b) seeing his good friend was a special treat and trips were always fun.
 - c) he could make this trip to Vancouver.
 - d) he hadn't known if he could afford the trip.
14. Since _____ the soup has been burning on the stove.
- a) remembering to stir the soup
 - b) the summer holidays ended
 - c) she walked out the door
 - d) she has a brown cat.
15. There is no need of skating fast while
- a) the actual hockey game.
 - b) we are practicing shooting the puck into the net.
 - c) ago we visited Russia.
 - d) we both know you won the ice skating aware.
16. This morning when
- a) I woke up I found I wasn't a coward any more.
 - b) the radio played music she visited several European countries.
 - c) that the mail strike is near, we hurriedly posted some letters.
 - d) I felt better, I stayed in bed.

17. After _____ Kate liked porridge.
- a) Canada became a country
 - b) a winter on the farm
 - c) her uncle trudged the old sheepdog.
 - d) without any hope of fresh supplies.
18. She wished he'd fix her skates before
- a) she had missed all the fun at the rink.
 - b) the Saturday audience she hoped to perform.
 - c) she promised to loan them to her sister.
 - d) he fixed that motorcycle.
19. They had reached the little hill behind the Post when
- a) reaching the Post itself would still be difficult.
 - b) again to make that journey northwards.
 - c) they saw a dog team coming out toward them.
 - d) does the swimming pool open?
20. "Come and help me!" cried Kobi to his friend, and then
- a) I hope to spend the holidays at the beach.
 - b) he was frightened he began to cry.
 - c) "I'm only asking for help and you owe me a favour."
 - d) he hurriedly told him the story of Roslie.
21. Run between the stairs and the doorway now
- a) rain will spoil your new suede coat.
 - b) I distract your mother in the kitchen.
 - c) to the basement to dry yourself off.
 - d) it would have been safe to walk.

22. The leader decided to pitch camp until
- a) he was too tired to do more.
 - b) the storm died down.
 - c) making plans for the evening meal.
 - d) there was still some daylight to see by.
23. As soon _____ invite my favourite friends to my birthday party.
- a) as we have washed the dishes you can
 - b) Peter caught a cold and we were unable to
 - c) as a month ago
 - d) as go to bed without supper then
24. Last _____ coming from the barn.
- a) night we heard strange noises
 - b) swam at Miller's River
 - c) suddenly we saw the ghost
 - d) but still glad he entered the contest
25. Before _____, she helped Peter feed the dogs.
- a) her as far as she could see spread the prairies.
 - b) seeing the hungry dogs suffer more
 - c) animals were usually mean
 - d) going to the hut
26. They had just entered the rocket when
- a) should we land on the moon?
 - b) they wanted to visit the planet.
 - c) the explosion occurred.
 - d) we were foolish to trust the men from Mars.

27. Her parents enjoyed sitting by the stove, in the short interval before bed, while
- a) the cold of winter forced them to keep warm in their beds.
 - b) ago they had not been strong enough for this.
 - c) the kitchen was used as a cow shed.
 - d) she read aloud to them, translating as she went.
28. One morning after _____ the cow broke down the garden fence.
- a) years ago
 - b) Mr. Penny had gone to work
 - c) then usual
 - d) the poor condition of all the fences
29. Without friends and in poor health I thought that then
- a) selling the land, the house would also be sold.
 - b) I should be taken from this barren land.
 - c) I was older, I could spend my money as I pleased.
 - d) elephants were small animals.
30. And since _____, we know you have always been scared of ghosts.
- a) pretending to be brave, even at the river
 - b) you feel so tired tonight
 - c) that night at the river
 - d) begging me to keep it a secret Joan told me and

APPENDIX D**MULTIPLE CHOICE TEST USED IN PILOT #2**

APPENDIX D

MULTIPLE CHOICE TEST USED IN PILOT #2

1. It was dusk again, and a rising storm made it hard to see ahead when
 - a) they were out of work.
 - b) lessening their chances of getting home.
 - c) they reached a frozen lake.
 - d) they had eaten a good supper.
2. For a moment the narrow cobbled street was empty then
 - a) the people liked oranges.
 - b) it was filled once more.
 - c) the flowers will bloom again.
 - d) this happened at the sound of the siren.
3. Peter's good ears caught the sound of footsteps almost as soon
 - a) prepare for the worst, he thought.
 - b) but this time the intruder was closer.
 - c) as he had seen the torches.
 - d) he thought.
4. Yet every wild animal went there to die when
 - a) his time came.
 - b) the place was a new playground.
 - c) questioning the reason why.
 - d) it was raining.

5. Since _____ his leg has shrivelled.
- a) you enjoy playing with us
 - b) because of the seriousness of the accident
 - c) learning to sing
 - d) that time
6. He has been to sea but now
- a) his wife's illness he has been living in England.
 - b) each departure he would visit his aging parents.
 - c) a storm blew up.
 - d) he writes books.
7. At last _____ to look at the old pines on the Miller farm.
- a) she went behind the hut
 - b) account, she was happily settled
 - c) row seats in the huge theatre, they were in a poor position
 - d) before in the history of man did so many people want
8. "But Grandfather," gulped Walter when
- a) I was in the hospital, I'm fine now.
 - b) the snow falls let's play in the rain.
 - c) impatiently, how long will we have to wait?
 - d) he could talk once more, "what will they do with Father?"
9. They looked again in every part of the room, and then
- a) it was their job to continue the search any way.
 - b) seeing no one, Dorothy asked, "Where are you?"
 - c) they searched, their nerves were on edge.
 - d) it was nearly springtime.

10. He had saved for a long time before
- a) the bus station waited his aunt and uncle.
 - b) seeing his good friend was a special treat and trips were always fun.
 - c) he could make this trip to Vancouver.
 - d) he hadn't known if he could afford the trip.
11. Since _____ the soup has been burning on the stove.
- a) remembering to stir the soup
 - b) the summer holidays ended
 - c) she walked out the door
 - d) the children were playing
12. There is no need of skating fast while
- a) the actual hockey game.
 - b) we are practicing shooting the puck into the net.
 - c) ago we visited Russia.
 - d) we both know you won the ice skating award.
13. She wished he'd fix her skates before
- a) she was missing all the fun at the rink.
 - b) the Saturday audience she hoped to perform.
 - c) she promised to loan them to her sister.
 - d) he fixed that motorcycle.
14. They had reached the little hill behind the Post when
- a) reaching the Post itself would still be difficult.
 - b) again to make that journey northwards.
 - c) they saw a dog team coming out towards them.
 - d) does the swimming pool open?

15. Run between the stairs and the doorway now
- a) rain will spoil your new suede coat.
 - b) I distract your mother in the kitchen.
 - c) to the basement to dry yourself off.
 - d) it would have been safe to walk.
16. The leader decided to pitch camp until
- a) he was too tired to do more.
 - b) the storm died down.
 - c) making plans for the evening meal.
 - d) there was still some daylight to see by.
17. Her parents enjoyed sitting by the stove, in the short interval before bed, while
- a) the cold of winter forced them to keep warm in their beds.
 - b) ago they had not been strong enough for this.
 - c) the kitchen was used as a cow shed.
 - d) she read aloud to them, translating as she went.
18. One morning after _____ the cow broke down the garden fence.
- a) years ago
 - b) Mr. Penny had gone to work
 - c) than usual
 - d) the poor condition of all the fences
19. Without friends and in poor health I thought that then
- a) selling the land, the house would also be sold.
 - b) I should be taken from this barren land.
 - c) I was older, I could spend my money as I pleased.
 - d) elephants were small animals.

20. And since _____, we know you have always been scared of ghosts.
- a) pretending to be brave, even at the river
 - b) you feel so tired tonight
 - c) that night at the river
 - d) begging me to keep it a secret Joan told me and
21. The train reached the mountains almost as soon
- a) as the conductor had said.
 - b) my travelling friend said to me.
 - c) prepare for the crash the nervous man told us.
 - d) but this time the weather had been perfect.
22. Before _____, she helped Peter feed the dogs.
- a) her as far as she could see spread the prairies
 - b) seeing the hungry dogs suffer more
 - c) animals were usually mean
 - d) going to the hut
23. After _____ Kate liked porridge.
- a) Canada became a country
 - b) a winter on the farm
 - c) her uncle trudged the old sheepdog.
 - d) without any hope of fresh supplies.
24. Last _____ coming from the barn.
- a) night we heard strange noises
 - b) swam at Miller's River
 - c) suddenly we saw the ghost
 - d) but still glad he entered the contest

25. They had just entered the rocket when
- a) should we land on the moon?
 - b) they wanted to visit the planet.
 - c) the explosion occurred.
 - d) we were foolish to trust the men from Mars.
26. Thinking back to pioneer days, then
- a) we will mark yesterday's homework.
 - b) links this years and last years social studies topics.
 - c) our grandfathers were young was an interesting topic.
 - d) boys and girls knew how to work.
27. "Come and help me!" cried Kobi to his friend, and then
- a) I hope to spend the holidays at the beach.
 - b) he was frightened he began to cry.
 - c) "I'm only asking for help and you owe me a favour."
 - d) he hurriedly told him the story of Roslie.
28. This morning when
- a) I woke up I found I wasn't a coward any more.
 - b) the radio played music she visited several European countries.
 - c) that the mail strike is near, we hurriedly posted some letters.
 - d) I felt better, I stayed in bed.
29. As soon _____ invite my favourite friends to my birthday party.
- a) as we have washed the dishes you can
 - b) Peter caught a cold and we were unable to
 - c) as a month ago
 - d) as go to bed without supper then

30. He sat waiting in the hall while _____ about his bad behavior.

- a) he could have left the building without thinking
- b) he was called into the office to talk about
- c) longer may make him think
- d) his parents spoke to the principal

APPENDIX E

CLOZE TEST

APPENDIX E

CLOZE TEST

Verbal Directions:

I would like you to listen to these directions very carefully because this may be the first time you have tried an exercise like this.

In this exercise you are to read 5 separate paragraphs. Each paragraph is part of a different story. In each paragraph there are some blanks. On the blackboard I have printed ten words. Your job is to complete the blanks with words from the board so that the paragraph makes sense. You may use each word as often as you like.

1. If only she could close her eyes and sleep and sleep, more soundly than ever _____.! But she knew that was something a rabbit must _____ do, not for a single moment. Even while she was sleeping, she must be alert. Her nose must always be smelling; her ears must always be listening, even though they lay flat along her back out of sight.

She had so many enemies! The woods were full of them, and in winter they were hungrier than other times. She could expect no mercy from them. _____ they caught her scent, they _____ stopped tracking her down.

2. _____ Ootook went outdoors where she could see to work. After filing, she managed to cut a barb into the nail and sharpen the point. _____ using the head of the axe, she carefully bent the nail into the shape of a fish hook. At last she was ready to return to the water-hole. Almost at _____ Ootook pulled out a salmon trout. By _____ she was too cold and hungry to stay out any longer. Picking up the fish _____ it could freeze, she ran back to the hut.

3. There in the sand beside the brook were two footprints! They were large footprints and had been made by a man. _____ someone had been here _____ him. That person might be hiding in the cave _____. _____ was Sammy so scared. He wanted to get out of the cave quickly. _____ he tripped and fell. The flashlight slipped out of his hand and broke as it crashed to the ground. Sammy was left in darkness. "_____ what shall I do?" Sammy asked himself. It was darker than the inside of a pocket.

4. One morning his mother looked at him lovingly, and said, "Timothy, where are your spots _____?" Timothy looked and found that they were all gone. _____ he was all one lovely colour like his mother. _____ before had he felt so grown up! He saw coming towards him through the trees the largest deer he had ever seen. For _____ in his life, Timothy could not utter a single word, even to ask a question. His mother said, "Timothy, that is your father coming to see us." Timothy had _____ seen his father _____ in all his life!

5. Donald's hand relaxed its hold on the rifle, and he was about to settle back into the warmth of the beaverskin robe, when a movement at the foot of his bed jerked him _____ more into startled attention. In the half-shadow cast by the upturned canoe, his eyes made out the form of a timber wolf. Donald waited for just a second while a chill shook him; _____ he grabbed his rifle and rose on his elbow, but _____ he could fire, the animal tottered in a queer manner, and _____ fell on its side at the foot of the bed.

APPENDIX F**MULTIPLE CHOICE TEST USED IN ACTUAL TEST SETTING**

APPENDIX F

MULTIPLE CHOICE TEST USED IN ACTUAL TEST SETTING

Name _____ Grade _____

1. It was dusk again, and a rising storm made it hard to see ahead when
 - a) they were out of work.
 - b) lessening their chances of getting home.
 - c) they had remembered their snow glasses.
 - d) they reached a frozen lake.
2. Today the narrow street was empty then
 - a) this would have been a rare event.
 - b) the parade could take place next Saturday.
 - c) it was filled once more.
 - d) this happened at the sound of the siren.
3. Peter's ears heard the sound of footsteps almost as soon
 - a) he whispered to his companion.
 - b) as he had seen the lights from their fires.
 - c) prepare for the worst, he thought.
 - d) but this time the mystery person seemed closer.
4. Since _____ his leg shrivelled.
 - a) you enjoy playing with us
 - b) because of the seriousness of the accident
 - c) moving north
 - d) that time

5. He had been to sea but now
- a) his wife's illness he has been living in England.
 - b) each departure he would visit his aging parents.
 - c) a storm blew up.
 - d) he writes books.
6. At last _____ to look at the old pines on the Miller farm.
- a) she went behind the hut
 - b) before in the history of man did so many people want
 - c) account, she was happily settled
 - d) day in the month they went
7. "But Grandfather," gulped Walter when
- a) I was in the hospital, I'm fine now.
 - b) the snow falls let's play in the rain.
 - c) impatiently, how long will we have to wait?
 - d) he could talk once more, what will they do with Father?
8. He had saved for a long time before
- a) seeing his good friend was a special treat and trips were always fun.
 - b) he could make this trip to Vancouver.
 - c) his bed on a table he placed his piggybank.
 - d) he hadn't known if he could afford the trip.
9. Since _____ the lunch had been burning on the stove.
- a) remembering to stir the soup
 - b) the summer holidays ended
 - c) the children were playing
 - d) she walked out the door

10. There is no need of skating fast while
- a) the actual hockey game.
 - b) we are practising shooting the puck into the net.
 - c) ago we watched a hockey game.
 - d) we both know you won the ice skating award.
11. She wished he'd fix her skates before
- a) she was missing all the fun at the rink.
 - b) the Saturday audience she hoped to perform.
 - c) she promised to loan them to her sister.
 - d) he fixed that motorcycle.
12. They had reached the little hill behind the Post when
- a) reaching the Post itself would still be difficult.
 - b) again to make that journey northwards.
 - c) they saw a dog team coming out towards them.
 - d) does the trading begin?
13. Run between the stairs and the doorway now
- a) rain will spoil your new suede coat.
 - b) I distract your mother in the kitchen.
 - c) to the basement to dry yourself off.
 - d) it would have been safe to walk.
14. The leader decided to pitch camp until
- a) he was too tired to do more.
 - b) the storm died down.
 - c) making plans for the evening meal.
 - d) there was still some daylight to see by.

15. Her parents enjoyed sitting by the stove, in the short time before bed, while
- a) the cold of winter forced them to keep warm in their beds.
 - b) ago they had not been strong enough for this.
 - c) they often had to put more wood in the stove.
 - d) she read aloud to them, translating as she went.
16. Without friends and in poor health I thought that then
- a) selling the land and the house would also be sold.
 - b) I should be taken from this barren land.
 - c) I was older, I could spend my money as I pleased.
 - d) elephants were small animals.
17. And since _____, we know you have always been scared of ghosts.
- a) pretending to be brave, even at the river
 - b) you feel so tired tonight
 - c) that night at the river
 - d) begging me to keep in a secret Joan told me and
18. The train reached the mountains almost as soon
- a) as the conductor had said.
 - b) my travelling friend said to me.
 - c) prepare for the crash the nervous man told us.
 - d) but this time the weather had been perfect.
19. Since _____, Rita had written some interesting stories.
- a) reading through the newspaper we noticed that
 - b) her trip to Disneyland
 - c) we were hoping that
 - d) of the interest you took

20. Before _____ close all the windows.
- a) leaving the building remember to
 - b) the oldest boy in the class was asked to
 - c) the fire bell rings remember to
 - d) disobey the fire rules remember to
21. After _____ Kate preferred the comforts of city life.
- a) her uncle trudging through the high snow
 - b) without any hope of fresh supplies
 - c) while talking it over with her mother
 - d) a winter on the farm
22. Thinking back to pioneer days, then
- a) we will mark yesterday's homework.
 - b) links this years and last years social studies topics.
 - c) our grandfathers were young was an interesting topic.
 - d) boys and girls knew how to work.
23. He sat waiting in the hall while _____ about his bad behavior.
- a) he could have left the building without thinking
 - b) he was called into the office to talk about
 - c) longer may make him think
 - d) his parents spoke to the principal
24. Before _____ now camp life has changed.
- a) the entrance to the camp was a welcome sign
 - b) reading the article in the newspaper Dad is happy
 - c) six o'clock on weekends would be a good time to visit the theatre
 - d) the boys learned how to build fires and the girls how to catch butterflies

25. He waited for his fishing partner at the lake until

- a) the sun had set.
- b) his fishing gear became too heavy.
- c) night fell he drove back to the city.
- d) trying his luck in a nearby stream.

APPENDIX G
ANALYSIS OF FREQUENCY OF TIME EXPRESSIONS
FOR READER SERIES

APPENDIX G

ANALYSIS OF FREQUENCY OF TIME EXPRESSIONS FOR READER SERIES A

	Grade 4	Grade 5	Grade 6
after	5	18	8
always	5	1	6
before	5	19	11
ever	8	9	3
just	10	10	7
last	3	6	10
never	5	10	7
now	14	19	26
often	1	2	4
once	6	10	8
presently	0	2	3
since	0	1	3
soon	2	9	2
suddenly	4	1	4
then	16	31	37
until	4	7	10
when	17	29	25
while	3	5	7

ANALYSIS OF FREQUENCY OF TIME EXPRESSIONS FOR READER SERIES B

	Grade 4	Grade 5	Grade 6
after	12	9	8
always	1	1	4
before	7	10	12
ever	5	3	6
just	12	11	14
last	9	2	5
never	3	3	8
now	15	17	22
often	3	3	4
once	5	1	8
presently	0	0	0
since	2	0	4
soon	2	2	6
suddenly	7	2	7
then	25	23	21
until	11	0	6
when	21	21	21
while	9	5	8

ANALYSIS OF FREQUENCY OF TIME EXPRESSIONS FOR READER SERIES C

	Grade 4	Grade 5	Grade 6
after	12	12	20
always	13	6	5
before	9	14	13
ever	10	10	6
just	16	12	19
last	10	10	5
never	6	11	6
now	22	20	21
often	1	3	4
once	9	6	8
presently	2	1	1
since	4	6	4
soon	7	2	6
suddenly	7	6	5
then	25	33	27
until	9	5	8
when	32	42	29
while	8	12	6

APPENDIX H

SUMMARY OF STUDENTS' ANSWERS ON MULTIPLE CHOICE
TEST BY GRADE LEVEL

APPENDIX H

SUMMARY OF GRADE 4 STUDENTS' ANSWERS ON MULTIPLE CHOICE TEST

	Percentage of Students who Chose			
	(a)	(b)	(c)	(d)
after	68.57	8.57	8.57	14.29
before	55.00	20.00	9.29	15.71
last	88.57	2.86	5.71	2.86
now	45.71	10.00	17.14	27.14
since	57.14	27.14	8.57	7.14
soon	85.71	10.00	2.86	1.43
then	51.43	23.81	13.33	11.43
until	61.43	24.29	4.29	10.00
when	62.86	20.96	5.71	10.48
while	57.14	17.14	1.90	23.81

SUMMARY OF GRADE 5 STUDENTS' ANSWERS ON MULTIPLE CHOICE TEST

	Percentage of Students who Chose			
	(a)	(b)	(c)	(d)
after	76.06	5.63	11.27	7.04
before	58.80	22.18	8.80	10.21
last	73.24	4.23	7.04	15.49
now	46.48	13.38	16.90	23.24
since	60.21	24.65	7.75	7.39
soon	82.39	5.63	9.86	2.11
then	43.19	28.63	7.04	21.13
until	65.49	21.83	5.63	7.04
when	68.54	15.02	2.82	13.62
while	61.50	14.55	4.69	19.25